Regulation
Spring 1992 The Cato Review of Business & Government

Insurance Regulation

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The McCarran Debate
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Catastrophic Earthquake Insurance
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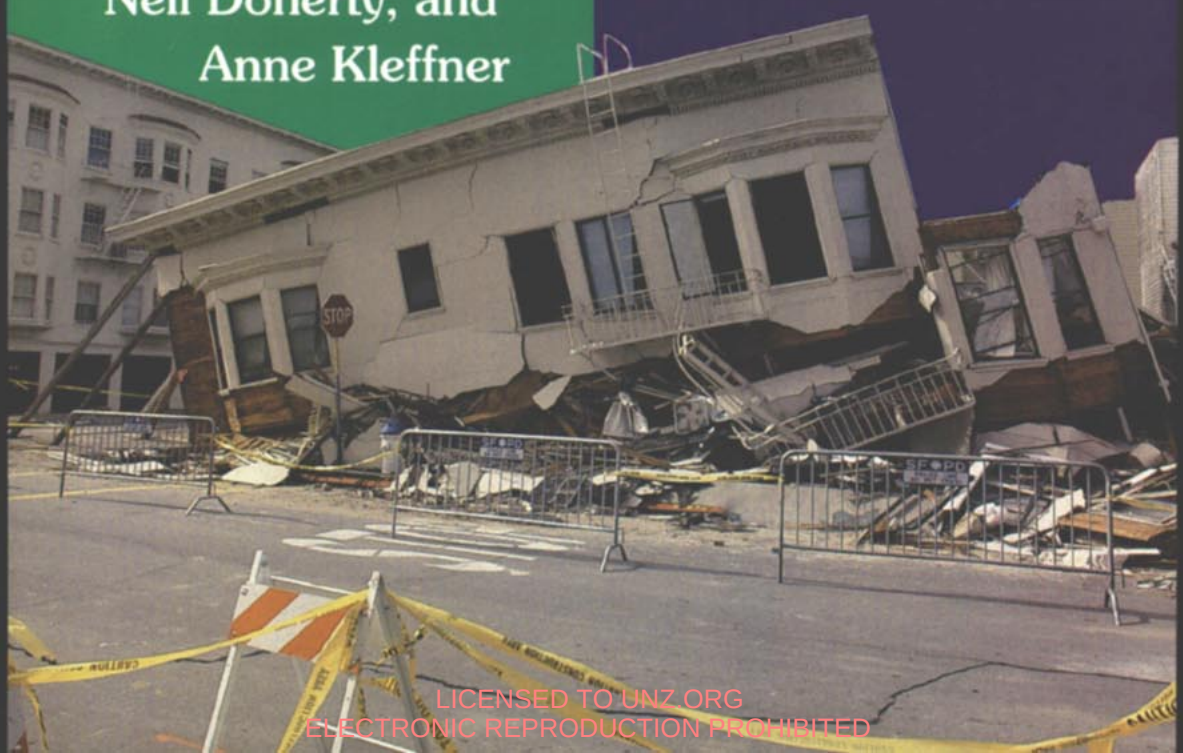

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Un-common policy sense.

What Has Government Done to Our Health Care? by Terree P. Wasley. The crisis in health care is the result of a long history of government meddling in the medical marketplace. In a variety of ways the state has limited the supply of and overstimulated demand for medical services. Wasley's prescription for reversing the ills of the system is to give consumers the power to control their own health care spending. 1992/160 pp./$19.95 cloth/$10.95 paper

A Search for Enemies: America's Alliances after the Cold War by Ted Galen Carpenter. The passing of the Cold War is the most important development of the late 20th century. Yet Washington clings tenaciously to a host of obsolete, expensive military alliances, including NATO, that have the potential to embroil the United States in conflicts unrelated to its vital interests. Carpenter proposes withdrawal from those entangling alliances and a policy of nonintervention. 1992/212 pp./$22.95 cloth/$12.95 paper

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Quagmire: America in the Middle East by Leon T. Hadar. The author challenges the Washington foreign policy consensus, which demands that the United States remain the dominant power in the Middle East. After examining American policy through the Persian Gulf War and arguing that the United States cannot impose order in the region, Hadar concludes that it is time for America to disengage from the Middle East and adopt a policy of benign neglect. 1992/240 pp./$23.95 cloth/$13.95 paper

Patient Power: Solving America's Health Care Crisis by John C. Goodman and Gerald L. Musgrave. The price of health care and insurance is skyrocketing because few people spend their own money on medical services. The authors' innovative solution is to restore power and responsibility to consumers by allowing them to buy their own tax-free medical insurance and to set up tax-free medical savings accounts. The result would be a consumer-directed system of competition and innovation. 1992/550 pp./$29.95 cloth/$19.95 paper

Sound and Fury: The Science and Politics of Global Warming by Patrick J. Michaels. The author, an environmental scientist, writes that despite the current hype and science-by-press-release, the greenhouse effect poses no serious threat to the world we know. The most disturbing finding of his study, however, is the willingness of some to distort science to expand the government's control over our lives. 1992/208 pp./$21.95 cloth/$11.95 paper

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Regulation

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Letters

We welcome letters from readers, particularly commentaries that reflect upon or take issue with material we have published. The writer's name, affiliation, address, and telephone number should be included. Because of space limitations, letters are subject to abridgment.

Competing away the Obligation to Serve

TO THE EDITOR:

While the articles in the Winter 1992 issue on electric utility regulation (Vol. 15, No. 1) contain many valid points, they omit a rather important topic. Each concludes that some form of deregulation, competition, and restructuring in the industry would be beneficial. They neglect to discuss the significant benefits derived from the current system and how those benefits might be affected.

The U.S. electric system is the envy of the world. One article fleetingly acknowledges the remarkable reliability of our system, but none mentions that the level of economic coordination that takes place in America is unmatched worldwide. In the United States sales-for-resale currently account for over 18 percent of sales to end-users. Coordination among utitities, including the sharing of generation reserves, yields $18 billion in savings for electric customers every year.

Those savings are only possible in an environment where utilities are willing to share planning and operation data that might not be available in the competitive market your writers envision. The articles fail to acknowledge that the efficiency embodied by the current system could be sacrificed should the changes proposed by your authors be implemented, especially if implemented without careful thought of the obligation to serve and how such an obligation is incompatible in a competitive environment.

Several of the articles suffer from the aforementioned omission, the piece by Douglas Houston ("User-Ownership of Electric Transmission Grids") particularly so because he proposes the most far-reaching changes. He also fails to mention, much less resolve, the equity questions associated with spinning off the transmission grid to consumers. How much would utilities who built the lines, and their customers who paid for them, be reimbursed?

Mr. Houston mentions the ability of those who could establish ownership in local distribution—industrial accounts, municipalities, and others—as benefitting from being able to make market purchases. But what about small customers, such as families, small businesses, and individuals, who would inevitably witness higher rates in such an environment? The obligation-to-serve question becomes especially difficult whenever the subject turns to competition for retail customers. Would local utilities be required to provide service to customers who choose to leave and then come back? Could a local utility curtail service as a supplier in a truly competitive marketplace?

To conclude, the articles in the Winter 1992 edition of *Regulation*, while interesting, fail to offer a balanced assessment of the changes taking place in the electric utility industry and their potential effects. While the electric utility industry recognizes that change is inevitable, we want to ensure that such change does not result in losing the substantial economic and reliability benefits provided by the existing industry framework. Beneficial changes need to build on that framework and provide enhanced efficiency and reliability where possible.

Thomas R. Kuhn
President
Edison Electric Institute
Washington, D.C.

Identifying Barriers to Voluntary Transactions

TO THE EDITOR:

The Winter 1992 issue of *Regulation* (Vol. 15, No. 1) helped clarify how much of the battle over electricity deregulation is really a battle over rents rather than efficiency. Everyone seems to want to expropriate the generation and transmission companies' right to determine whose power they will carry. Several commentators in the Winter 1992 issue of *Regulation* seem to prefer wheeling or common carriage, while Doug Houston's user-ownership option would make the transfer of property rights explicit.

However, if current arrangements in the electric power industry generate large inefficiencies, then there ought to be gains from trade between current transmission owners and those who would like to use their facilities. Of course, voluntary wheeling or voluntary sale of transmission lines will allow generation and transmission companies to keep some or all of their monopoly rents, but it ought to be possible to structure deals in ways that promote economic efficiency.

The voluntary option will still be distasteful to those who dislike the transfer of rents to the generation and transmission companies. But it is difficult to make statements about the equity of voluntary wheeling until we actually know the distributional effects, which will depend on factors such as the number of "widows and orphans" (and middle-class pension plans) who own utility stocks.

In short, the electricity debate desperately needs research identifying the barriers to voluntary transactions and their likely distributional consequences.

Jerry Ellig
Associate Director
Center for the Study of Market Processes
George Mason University
Fairfax, Va.

Accommodating Beneficial Changes

TO THE EDITOR:

The most radical proposal in the *Regulation* issue focusing on electric power deregulation (Vol. 15, No. 1) is the plan Douglas Houston ("User-Ownership of Electric Transmission

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Grids") puts forward to solve the transmission-as-a-barrier-to-entry problem through a system based on the "cooperative" model—consumers as owners. In effect, Professor Houston would finesse the access and pricing issue by deregulating transmission service after removing, in part, the middle link in the vertically integrated supply chain for electricity. Although radical, Houston's proposal might well be embraced by investor-owned utilities since it would permit current owners to capture the economic rent created by the essential role of existing facilities in power transactions. To some extent that may be denied them now by cost-of-service regulation of transmission pricing, although inventive utilities already capture some of that rent through purchase-resale arrangements.

In fact, it is just this last observation that leads one to believe that transmission access may not play the pivotal role suggested by some participants in the current debate in Congress and at Federal Energy Regulatory Commission. The current system captures production efficiencies. The issue is the capture of economic rents. Those promoting average embedded cost pricing believe that the rent should go to the parties to the purchase or sale of power. Robert Michaels ("Deregulating Electricity: What Stands in the Way") believes that pricing should reflect scarcity and reliability consequences. Professor Houston would shift rents to owners.

If pricing is the key, and I believe that it is, then developing proper pricing should be the focus in the transmission area. That appears to be the trend at FERC. Recent decisions have shown receptivity to marginal cost-related concepts such as opportunity costs. Fixing pricing, moreover, seems much simpler than Professor Houston's restructuring proposal—not raising the multitude of practical, operational issues inherent in that approach (for example, who will have control of the system, how will conflicts among owners be settled?).

Competition in generation is not a question of "if" or even "when" but of "how." How should regulatory and legal structures be revamped to best accommodate beneficial changes?

Michael B. Rosenzweig
Vice President
National Economic Research Associates
Washington, D.C.

Accounting for Costs and Cost Biases

TO THE EDITOR:

Geoffrey Rothwell asks, "Can Nuclear Power Compete?" (*Regulation*, Winter 1992), but two sets of analytic flaws prevent his article from answering that question.

Price-Anderson and the Coase Theorem. Rothwell adopts the common view that the Price-Anderson liability limit constitutes an implicit subsidy for the nuclear industry, in that the industry in the event of an accident would not have to pay for damage above the limit. That conventional view is incorrect. Consider a train that generates sparks, which in turn damage corn adjacent to the railroad right-of-way. If the crop damage is, say, $100, but the cost of spark suppression (either by installing equipment or discontinuing train service through the corn field) is $150, the railroad will continue service and corn destruction if transactions costs are low, regardless of the allocation of property rights. If the farmer has property rights in the land adjacent to the right-of-way, the railroad will offer a payment between $100 and $150 for the right to continue operations. If the railroad has the property rights, the farmer will offer no more than $100 to induce the railroad to avoid damaging the corn.

If the railroad can avoid $90 of the crop damage at a cost less than $90, it will do so (assuming that the farmer cannot avoid this damage even more cheaply), regardless of the allocation of property rights. If avoiding the remaining $10 of crop damage would cost the railroad more than $10, it will inflict that increment of damage, again regardless of the allocation of property rights. In the absence of transactions costs, the party that can avoid given damage most cheaply will be induced to do so, regardless of the allocation of property rights.

The allocation of property rights determines the direction of payment, that is, the distribution of wealth; but it is not a "subsidy" in that it does not affect the marginal cost of either railroad operations or corn production, because the cost of, say, a payment to the farmer is the same as the opportunity cost of a forgone payment from the farmer.

If transactions costs are significant, the allocation of rights does affect the allocation of resources. Coase demonstrated that the efficient allocation of rights is that yielding the allocation of resources that would obtain were transactions costs zero. Thus, the efficient liability rule is one that minimizes the sum of the costs caused by accidents and the costs of avoiding accidents. In our example, if it is cheap for the farmer to forgo crop production near the right-of-way, but expensive for the railroad to suppress its sparks, it would be efficient to give the railroad the right to use the adjacent land. That is not a "subsidy" from the farmer to the railroad; it is the efficient allocation of a scarce resource under conditions of significant transactions costs.

The prospective costs of potential nuclear accidents are identical analytically. Individuals and businesses near a nuclear generating station want to use the area for myriad purposes, while the nuclear plant would like to "use" it, in the event of an accident, to deposit radioactivity. Were transactions costs zero, the plant would find it cheaper to install safety equipment and to make other damage-limiting investments than to induce many or most of those living near the plant to move or otherwise to reduce the damage caused by future accidents. But surely it is relatively cheap for some people and businesses to take actions limiting future damage; at some margin, the incremental cost of damage avoidance by nearby residents falls below the incremental cost of damage avoidance by the plant. The plant would, therefore, pay some people and businesses to leave or to take other actions limiting future damages. That is particularly true for those who for whatever reasons would bear especially high costs in the event of an accident.

Since transactions costs in reality are high, the efficient liability rule is the one yielding that efficient allocation of resources. The Price-Anderson liability limit, by reducing expected damage payments, induces those who can limit damage cheaply, perhaps by moving, or those who would suffer diaproportionately in the event of a serious accident to leave the area or take other actions limiting future damage. Thus, Price-Anderson minimizes the sum of accident and accident-avoidance costs.

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That is not to say that $7 billion is the correct limit. But the limit conceptually is an efficient policy and is not a "subsidy" any more than full liability would be a subsidy for those living or moving near the plant.

The basic problem with the Rothwell view is its confusion of analytic and normative issues; neither the railroad nor the nuclear plant alone is the "cause" of the problem. The general problem of externality results instead from the competition for the use of scarce resources, in this case, the area surrounding the nuclear plant. Were there no other human activity near the power plant, no externality problem would exist. Any externality problem is dual in nature, regardless of the allocation of property rights. The nuclear plant and its neighbors impose costs upon each other in the form of externalities, explicit payments for rights, and opportunity costs borne in the pursuit of given activities.

The central issue is the most valuable use of the resource, and the liability limit is consistent with that end. Rothwell is confusing an assignment of property rights—which certainly affects the distribution of wealth—with a subsidy for particular activities. The $7 billion damage limitation in effect bestows upon the inhabitants of the area surrounding the nuclear plant a property right not to be damaged in the event of an accident up to $7 billion; and it gives to the plant a property right to impose damage above $7 billion. That is not a subsidy, although it is a transfer of wealth; it is an allocation of property rights that attempts to achieve the same allocation of resources that would obtain in the absence of transactions costs, that is, a minimization of the sum of accident and accident avoidance costs. A subsidy, properly defined, would change the allocation of resources from that prevailing in the absence of transactions costs. With significant transactions costs, the efficient allocation of rights yields the efficient allocation of resources; that is why it is not a "subsidy."

Analytic Asymmetries. Can anyone believe that regulated safety costs for nuclear generation stations are not far higher than those for coal-fired plants? Bernard Cohen's estimate of premature deaths caused by coal-fired generation is seventy-two per 1,000 megawatts per year, even with scrubbers and other mandated pollution equipment. That works out to about 38,000 premature deaths per year, most of which are among the elderly. Either nuclear plants are excessively safe or coal-fired plants are inordinately dangerous.

With respect to the waste issue, Rothwell claims that radioactive waste creates an "acute" negative externality, but the precise nature of that externality remains entirely obscure. The disposal of low-level waste—1 percent of the radioactivity, but 99 percent of the volume—is trivial, and only the most shrill and dishonest of the antinuclear activists make an issue of it. The disposal of high-level waste, from a purely technical standpoint, is a nonproblem, as the waste can be transformed and sealed into an inert glass and then buried in stable geologic formations. Cohen and Petr Beckmann estimate that radioactivity from such waste repositories at the earth's surface would be far below the natural background level and so would be unmeasurable.

Those technical conditions ought to be compared with the huge volume of toxic sludge that is engendered by coal-fired generation each year but that is hardly mentioned as a cost of such generation. That is one manifestation of the Alice-in-Wonderland politics of nuclear waste, in which the citizenry is misled by politicians and the media about the dangers of nuclear waste and then is asked to accept repositories in their backyards without pecuniary compensation.

Regulation creates other serious biases, of which I mention briefly only two here. Relative construction periods for nuclear and coal-fired plants affect relative costs crucially, but are heavily a function of regulatory politics. After all, how is it that kilowatt hours from, say, Commonwealth Edison's nuclear plants—completed on schedule—are so much cheaper than those of most coal-fired generation? Moreover, the steady erosion of electricity rate regulation into a tax-transfer game has increased the riskiness of all base-load investment. While difficult to measure, it is at least plausible that the effect has been more pronounced with respect to nuclear investment, precisely because of the political environment.

Rothwell's article simply does not examine the cost biases regulation inflicts on nuclear generation and so sheds little light on the issue of relative cost. That general problem is exacerbated by a series of narrower errors. Rothwell argues that cost-plus contracts be replaced with fixed-price contracts in plant construction, but nowhere does he demonstrate that the risk allocation inherent in the latter is superior to that of the former. He advocates standardized designs for plants but does not consider the ensuing effects over time for technical evolution and competition in plant engineering. He argues that an informational asymmetry exists between regulators and plant operators and advocates the use of incentive prices based on plant performance; but since the target performance must be negotiated, it is difficult to see how such a system would remove the informational problem. All in all, the Rothwell article is not a useful guide to the issue of relative cost.

Benjamin Zycher
Vice President for Research
Milken Institute for Job and Capital Formation
Sherman Oaks, Calif.

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Nuclear Power's Economic Problems

TO THE EDITOR:

Benjamin Zycher's letter raises several points, but they do not detract from my thesis: nuclear power's economic problems stem from the unhappy marriage between the industry and the government in response to inherent market failures. Zycher bases his criticisms on incomplete information and on an incomplete reading of my article. I discuss two of his points.

First, generating electricity with nuclear power is a dangerous activity. After a catastrophic accident (for example, one similar to Chernobyl) and without legislation to the contrary, the operating utility would be held strictly liable. That is, the public holds the property rights to live free from the fear of nuclear disaster. With complete insurance markets, utilities would pay premiums for full coverage. By limiting liability, the Price-Anderson Act reduces the utilities' premiums. In that way the act is a subsidy to the industry. The act solves the problem of incomplete insurance markets but creates a problem by distorting accident-avoidance behavior.

Second, a by-product of nuclear electricity generation is high-level radioactive waste. Spent fuel accounts for less than 1 percent of the volume—300,000 cubic feet—of all radioactive waste and 94 percent of the radioactivity (21 billion curies). The negative externality is acute because of its intergenerational effects. Theoretically, spent fuel can be vitrified, but that is not a cost-effective solution. Economically, spent fuel disposal remains a significant problem. Zycher does not give complete citations for his references, so I cannot respond to them.

In my article I identified the underlying economic problems associated with nuclear power, and I proposed solutions. Those problems will not be solved by assuming that they do not exist. Zycher does not propose any solutions. Until those problems are solved, nuclear power will be unable to compete.

Geoffrey Rothwell
Senior Research Associate
Stanford University
Stanford, Calif.

Liberal Trade and Antitrust in Developing Nations

TO THE EDITOR:

In "One U.S. Export Eastern Europe Does Not Need" (*Regulation*, Vol. 15, No. 1) Paul Godek states that in studying and instituting antitrust policies, the East European and other developing nations are wasting their efforts on a policy that will impede their development. He recommends reliance on a liberal trade policy as a means of correcting most of the concerns addressed by antitrust policy. We strongly disagree with the principal conclusions of Mr. Godek. The Federal Trade Commission under the initiation of Chairman Janet Steiger along with the Antitrust Division of the Department of Justice has been given a grant by AID to provide technical assistance to those newly developing market economies if they believe such assistance is useful. Those countries know their own situation quite well and believe that such help is critically important. Countries such as Poland and the Czech and Slovak Federal Republic have asked for and received long-term advisors, because they want their competition laws to enhance the free market, rather than act as road blocks to development.

In many ways we agree with Mr. Godek's insights into the reform process. The public statements and enforcement actions of the Federal Trade Commission have repeatedly affirmed that unimpeded trade among nations can enhance economic efficiency and raise consumer welfare. Certainly, liberal trade does not conflict with antitrust, but instead enhances it and can eliminate the need for certain antitrust actions in many industries. Yet liberal trade, though often touted, is seldom applied fully, and the fast-growing Asian nations have been very selective in applying liberal trade policies. In fact, if the examples of Hong Kong, Singapore, and Taiwan provide a lesson, it is that liberal trade policies in *export* markets strongly promote economic development. Thus, from a development perspective, the best place for liberal trade policies may well be the developed nations rather than the developing ones.

Mr. Godek suggests that economic reform in developing nations should focus on the commercial infrastructure and rely on liberal trade policies to promote competition and economic efficiency. That approach—sometimes called "shock therapy"—has most recently been tried in Poland. However, unlike some of the Pacific Rim nations, the East European nations have adopted political reforms in advance of economic reforms. As a result, politically enfranchised publics can express their disenchantment by voting. In similar situations, well-intended but sudden reforms have caused such dislocation that they were partially withdrawn, and, more important, ongoing reforms are cast in doubt. In Poland, some aggressive reforms—such as virtually free trade—have been subsequently withdrawn as a result of domestic opposition. That should be expected, for state-controlled or highly regulated economies accumulate a variety of economic distortions that are swept away when shock therapy is applied. The resulting sudden (but efficient) "reallocation" of resources often translates into closed factories, rampant unemployment, and rising economic misery.

Alternatively, a developing nation can pursue economic reform—without fully liberalized trade—by establishing its commercial infrastructure, defining the scope of private property rights, privatizing state-owned assets and enterprises, and instituting an effective antitrust policy. Alhough theoretically imperfect, such a "gradual" approach may provide a more stable means of pursuing reform because it addresses internal economic distortions before subjecting the domestic economy to the massive shocks that would accompany fully liberalized trade. Insisting on sudden and complete trade reform can make the perfect the enemy of the good and shows little sympathy for the adjustment costs imposed on a reforming nation. Alexis de Tocqueville once said, "The major concern of a government ought to be to teach the people to *gradually* do without it" (our emphasis).

Whichever approach is adopted, correctly defined competition policy should be a part of the reforms. Mr. Godek rightly points to mistakes made in the name of U.S. antitrust enforcement. Yet we think he would

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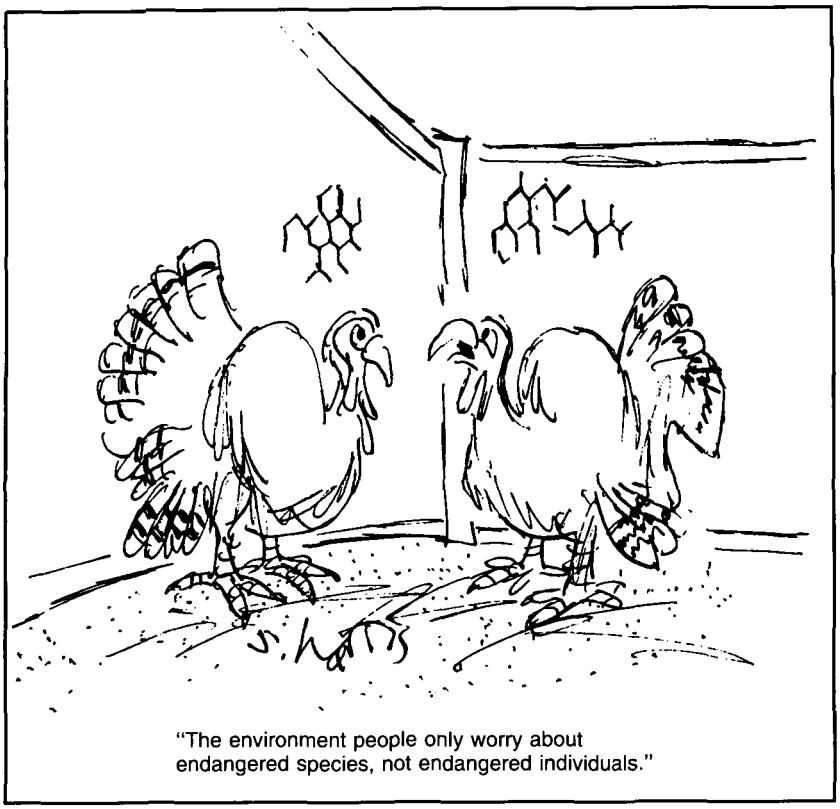

"The environment people only worry about endangered species, not endangered individuals."

agree that great strides were made during the past ten years in U.S. antitrust policy. Based on sound principles, it can play a role in helping to create a freely competitive marketplace in formerly socialist countries, as long as the changes take place alongside a variety of other institutions supporting private commerce, such as well-established private property rights and an orderly withdrawal by the state from many forms of commercial activity. In fact, the experiences of Taiwan, Singapore, and Hong Kong do not necessarily suggest that antitrust impedes innovation, for those nations have tended to be less innovative than South Korea, Japan, the United States, Germany, Britain, and France, all of which have had antitrust laws for many years.

Enactment and enforcement of antitrust law should not await the full development of the private commercial sector in developing nations. The transition from a state-controlled to a market economy represents a radical and perhaps frightening change for the citizens of the East European and other developing nations, and antitrust policy provides a means of directly addressing the entirely valid concern that state-sponsored monopolies might evolve into private monopolies that have the will and the means to restrict output, raise price, and impede development. By attacking restraints of trade, antitrust ensures that commercial opportunities, and the fruits thereof, are available to the many rather than to a select few. Setting up and consistently enforcing reasonable "rules of competition" sooner, rather than later, can also stabilize the legal environment, reduce uncertainty, and thereby encourage investment growth. If those and related concerns were not addressed so that the people in the streets could benefit directly from competitively low prices and increased consumer choice, then domestic opposition to the broad spectrum of market-based reforms might be considerably stronger and necessary reforms further delayed. In those ways, antitrust policy broadly supports the variety of reforms that facilitate the transition to a market economy.

Moreover, it is naive to believe that liberal trade obviates the need for and undermines the usefulness of antitrust policy in the face of those barriers to creating a free market economy. Although liberal trade can enlarge the commercial options available to buyers and sellers, that does not always occur in practice. In regional or local markets, liberal trade policies do little to enhance competition. Even for ostensibly international markets, the domestic benefits of international competition can be delayed, sometimes for years, and the antitrust cases involving price-fixing in international markets suggest that antitrust enforcement can promote efficiency and consumer welfare in ways that liberal trade policies alone do not.

Finally, virtually all of those countries have decided on their own that they need competition laws. In fact, some, such as Poland, had rudimentary competition laws on the books while operating under a communist system that presumably outlawed competition. Those laws often empower the competition agencies to set prices when they believe prices are monopolistically high (or low). Enforcing competition laws under such circumstances could return a developing market economy back to centrally controlled prices, which would obviously be a major impediment for market reforms. U.S. competition policy does not advocate these, and other potentially disastrous applications of competition law. Since those nations will have some form of competition policy, we believe that sharing our experiences enforcing our law, one that is designed to ensure buyer and seller choice, will help those countries avoid the potential problems raised by Mr. Godek and enhance—rather than discourage—growth.

Roger Boner
Economist

James Langenfeld
Director of Antitrust
Federal Trade Commission
Washington, D.C.

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Currents

Straws in the Wind

Ah, spring is lovely, even in Washington. Those of us who are concerned about the increasing regulation of the U.S. economy, however, appear to be headed into a gale. There are a few contrary breezes, but they seem likely to be overwhelmed by the number and magnitude of pending regulatory measures.

Insurance

In April Rep. John Dingell, the powerful chairman of the House Energy and Commerce Committee, introduced a major bill that would impose federal regulations on the insurance industry. That bill would also establish a national reinsurance fund through which solvent insurers would cover the policy claims on failed insurers but without a federal guarantee. Insurers that do not elect to participate in the federal system or do not meet the federal solvency standards would continue to be regulated by the state insurance commissions. All insurers would continue to be subject to continued state regulations of insurance rates.

The primary problem of the Dingell bill is the separation of solvency and rate regulation (see the later article by Scott Harrington); state insurance commissions would have even less incentive to be concerned with insurer solvency in setting insurance rates. The other problem of that proposed bill is that there is probably no way to avoid an implicit federal guarantee of a national reinsurance fund, with all of the consequent problems of the deposit insurance funds and the several federal credit programs.

The Dingell bill is seriously flawed but could provide the basis for useful legislation. The most productive outcome would allow national insurers to elect federal solvency regulation in exchange for full immunity from federal or state rate regulation. In the absence of such a provision, the seriously flawed system of state insurance regulation is probably better than any federal regulation.

Medical Care

Congress is also considering a major bill that would extend the Medicare payment rates for physicians and hospitals to all private payers. That bill was introduced by another baron of the House, Rep. Dan Rostenkowski, chairman of the Ways and Means Committee. The bill, in effect, would establish a system of "optional" price controls. That system, however, would be optional only to the payers, not to the providers. Physicians and hospitals would be required to provide medical care to all patients and, at the option of the patient or private insurer, accept the government-determined rates as full compensation. Congress should be reminded that, in the relation between men and women, such one-sided consent is properly described as rape.

The primary effect of the Rostenkowski bill would be to establish a two-class system of medical care. Patients insured by payers that do not participate in that system would continue to receive high-quality medical care. Patients in plans that elect to participate in that system would have lower insurance rates but would also experience all of the qualitative effects of medical care price controls in other countries:

- less convenient appointment hours
- shorter physician's time per visit
- longer waiting times for nonemergency care
- the denial of some services and test procedures
- a reduction in the number of physicians and hospitals in rural areas and the inner cities
- a lower level of amenities in hospitals
- in general, a lower standard of medical care.

The magnitude of those effects would depend on the difference between the payment rates that would otherwise prevail and those rates set by the government for each category of physician and hospital services. Small price savings would lead to small reductions in quality; large price savings would lead to larger reductions in quality.

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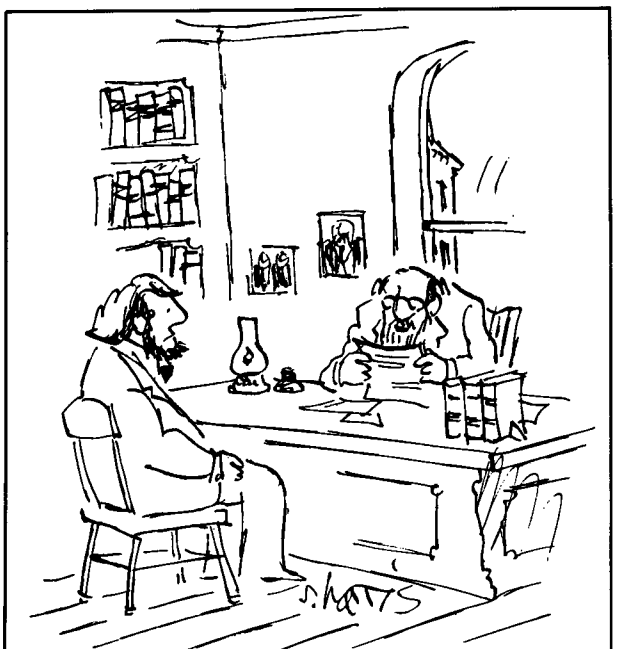

"Well Mr. Thoreau, we're interested in publishing your views on government authority and personal freedom, but perhaps you could leave out some of the references to lima beans and turnips."

Medical care providers, in turn, would be subject to increased regulation to enforce the payment rates and limits on balance billing and in an attempt, probably futile, to prevent the discrimination in services between the two classes of payers. Over time, in addition, the increased regulation and lower income would reduce the number of medical professionals and the quantity of medical care.

Congress should not deceive itself or the American people that such a system would restrain the inflation in medical prices without causing those other effects. Price controls are the political equivalent of trying to make water run uphill. One might hope that the collapse of communism had destroyed the illusion of scientific socialism, but the recurrent proposals to control the prices of medical care suggest that Congress has not yet learned that lesson.

Energy

April was a busy month. The House Interior Committee approved legislation that would tighten nuclear licensing procedures and would extend and broaden the moratorium on offshore oil development. The Senate had previously deleted the proposal to open the Alaskan Natural Wildlife Refuge to oil development. In the following month, Congress probably expressed concern about our increased dependence on coal and imported oil.

Antitrust and Trade

The administration was not immune to incoherent policies. The Justice Department announced that it is considering antitrust actions against domestic subsidiaries of foreign firms if the behavior of the parent firms would be actionable under U.S. law and have the effect of restricting U.S. exports. The domestic subsidiaries, in effect, would be hostages, even if their behavior is wholly consistent with U.S. law and the behavior of their parent firm is wholly consistent with foreign law. The extraterritorial application of the laws of any nation should be regarded as an offense but is especially short-sighted on the part of our government. As a consequence of our low saving rate and unusually large federal deficit, the United States is especially dependent on foreign investment. Such an action by the Justice Department, of course, is likely to reduce foreign investment and the level of total investment in the United States.

Creative accountants at Customs, moreover, have determined that Hondas assembled in Canada with an engine produced in Ohio do have sufficient local content to qualify for tariff-free treatment under the U.S.-Canada Free Trade Agreement. The Canadians have correctly interpreted that action as an attempt to shift foreign investment from Canada to the United States (maybe to create more hostages to our antitrust laws). At roughly the same time, creative accountants at the Commerce Department have again determined that the Canadians are subsidizing their soft wood lumber exports, in this case by a measure (the prohibition on the export of logs from public forests) that is similar to a U.S. measure. In the meantime, our trade officials have reported that negotiations on the North American Free Trade Agreement have proved to be more complex than expected. Big surprise?

The Global Environment

In June representatives of most nations met at the Earth Summit in Rio de Janeiro. The objective of that conference was to elicit commitments to address the perceived "crises" of the global environment. The primary problem of the conference

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was that there is almost no solid scientific evidence of those perceived crises (see the later article by Richard Lindzen on global warming). The primary threat from the conference was that our government might make a premature commitment to taxes or controls on the use of carbon fuels that would further reduce our very low rate of economic growth. The mindset that led to the Earth Summit is probably the major regulatory threat of our lifetime. May I wish that all participants suffered a mild bout of dysentery.

Some Contrary Breezes

Life is not without hope. There were a few warm breezes to sustain the optimists that science, economics, and the rule of law might constrain the regulatory behemoth.

James MacRae, the acting administrator of the OMB Office of Information and Regulatory Affairs, recently induced a paroxysm among the regulators by observing, correctly, that the reduction of income resulting from some health and safety regulations might increase risks by more than those the regulations would reduce. MacRae was forced to back down on the specific OSHA ruling to which he applied the perspective. The potential for a more general application of his perspective, however, is substantial. That perspective shifts the criterion from a comparison of estimated benefits and costs to a risk-risk or a life-life comparison. That avoids both the selective statutory and court rulings that prohibit the application of benefit-cost analysis to safety issues and the awkward problems of estimating and defending the value of a statistical life. Moreover, the available estimates of the incremental income that would save one expected life are in the same range as the estimates, based on revealed behavior, of the value of a statistical life, so the two types of analyses lead to roughly the same conclusions. This story is not over. We need better estimates of the effects of increased income on the reduction of illness, injury, and death. And, after their paroxysm has subsided, we need to explain to the regulators why "wealthier is healthier" and why some health and safety regulations reduce both wealth and health.

Sam Kazman, the counsel for our adventurous friendly competitor, the Competitive Enterprise Institute, recently took the Justice Department, the National Highway Traffic Safety Administration (NHTSA), and (as an intervenor for the defense) General Motors to court and won! The case involved the automotive fuel economy standards, and the charge was that NHTSA had not considered the effects on automotive safety (its primary mission) in setting the fuel economy standards. The scientific evidence is clear and was conceded by NHTSA: large cars are less fuel efficient but are safer than small cars. The issue was whether NHTSA could set the fuel economy standards without considering the effects on safety. In this case, Judge Steve Williams of the federal Court of Appeals for the District of Columbia wrote a strongly worded decision, and a divided panel of that court (including Justice Clarence Thomas) ruled against NHTSA. That decision has two important general legal implications: a public interest group was granted standing to challenge a regulation without representing a specific individual that was harmed. And a regulatory agency must consider side-effects of regulations within the scope of their statutory authority.

Finally, we are awaiting a Supreme Court ruling in the *Lucas* case that would restore some constitutional protection to regulatory takings of property.

Hope springs eternal!

W.N.

Reviving Life Insurance Sales Policy

Peter Katt is a life insurance agent who thinks he has invented the better mousetrap. The West Bloomfield, Michigan, resident wants to sell life insurance in a radical way: charge his customers an hourly rate for his services and then rebate to them 100 percent of any commission he receives from the insurance company. "Why not?" Katt asks. Doctors, lawyers, accountants, and other professionals charge by the hour. Why not insurance agents?

There is only one problem with his idea: it is illegal in Michigan. In fact, Katt could lose his license, pay a $25,000 fine, and spend three months behind bars if he engaged in the heinous crime of "rebating" his commission to his customers.

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That is odd, particularly when one considers that Michigan's largest employers are automakers, who use rebates as a normal, competitive business practice. Unfortunately, rebating is a dirty word in the insurance business, and Michigan is not unique. Antirebate laws are on the books in every state except California and Florida. And if you are wondering why life insurance is such a confusing subject and why it is so difficult to compare competing policies, those antirebate laws play a major role.

To understand why that is so, it is important to understand that life insurance companies compete for business by trying to offer agents higher commissions than their competitors. Thus, it is not surprising to see insurance companies pay agents 90 percent (or even 105 percent) of the first year's premium as compensation, with only piddling sums paid out in subsequent years.

Up to a point that makes sense. Insurers realize that life insurance is a topic that most consumers prefer to avoid. It reminds them of their own mortality. Thus, the most successful agents tend to be the ones who manage to break down the customer's natural desire to avoid the subject, and a generous, up-front compensation scheme rewards that skill.

But the imposition of antirebate laws on that system makes no economic sense and can create some serious problems. First, and most obviously, some agents may prefer not to keep the full commission. They would rather compete for a customer's business by offering a lower price or, as Katt proposes, a different type of service. Antirebate laws quite deliberately forbid that type of competition, in much the same way as it used to be illegal for stockbrokers to discount their commissions.

Second, antirebate laws strengthen the anticompetitive aspects of the commission system and thus create an inherent conflict of interest between the agent's desire to maximize income and his obligations to the client. And that can cost consumers, even supposedly sophisticated consumers, plenty.

Katt tells with relish the story of the lawyer who bought a $500,000 policy with a first-year premium of $6,830, which would have a cash value after twenty years of $167,145. When Katt reviewed his client's insurance coverage, he wanted to know whether the agent ever mentioned that the insurer sold a virtually identical policy that had a cash value of $257,790 after twenty years and that required the customer to pay a first-year premium of only $6,400. The answer was no.

What explains the difference between those two policies, one of which is obviously a better deal for the consumer? The answer is the commission structure. The former policy pays agents a 90 percent commission, or $6,147, whereas the latter policy pays only a 45 percent commission, or $2,880. By not telling potential customers about the latter policy, the agent is able to pocket an additional $3,267.

As this anecdote makes clear, the consumer does not always come out ahead under the commission system, and the problem is compounded by the fact that consumers have difficulty comparing policies on their own. There is no consumer guide to insurance policies in the same way that there are consumer guides for new-car buyers. And most consumers do not realize how central the commission system is to how much they pay and what they receive, which is why you probably never asked your agent such questions as "How much will you earn if you sell me this policy?" or "Do you have anything that pays you only a 50 percent commission?"

Small wonder that life insurance is perceived as confusing and complicated. It is, and the antirebate laws help insurers and agents keep it that way.

What is missing from this picture seems obvious: an information broker who is not swayed by the commission figures dangled in front of his eyes by the insurance companies and who can afford to be objective because he will be paid the same amount of money whether he recommends policy A or policy B. And that is the niche that Peter Katt would like to fill if it were not illegal for him to rebate.

Katt figures that if he charges a client a flat hourly rate for his time (say, $110 an hour), he can provide objective advice about the merits and demerits of particular policies without regard to who the insurer is or how much he will get paid. From the client's standpoint, that is also a winning combination. The client can be comfortable that the agent has no hidden agenda and is recommending policies that meet his specific needs. Also, Katt's proposal can produce considerable savings, as first-year premiums can easily cost several thousand dollars.

The case for abolishing antirebate laws would seem to be clear-cut. After all, minimum fee schedules for lawyers and fixed commissions for stockbrokers both ended in 1975 and thus paved the way for more price and service competition, most

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clearly seen in the form of legal clinics and discount brokerages. So, too, in the insurance field, one could expect to see the emergence of discount agents who compete by offering rebates to consumers, while others, such as Mr. Katt, would offer a system that emphasizes personalized service and advice.

But if rebating and competition are such good ideas, what is stopping them? To understand the answer, a small bit of history may be useful.

Antirebate laws arose during the zeal of the Progressive Era. In the early 1900s the New York legislature created the Armstrong Committee, which recommended a comprehensive set of proposals that resulted in the modern framework of insurance regulation. Public concern focused on the fact that many thinly capitalized insurance companies emerged on the scene in the last third of the nineteenth century, and many of them went bust or otherwise failed to have enough money on hand to pay claims.

To remedy those problems the Armstrong Committee recommended a series of proposals designed to assure that adequate reserves were maintained, speculative investments were discouraged, and other steps were taken to assure the financial soundness of insurance companies. State legislatures, led by the National Association of Insurance Commissioners, quickly fell into line.

The Armstrong Committee, and state insurance regulators generally, viewed rebating as an evil to be stamped out, though for reasons having little to do with protecting the public. For a flavor of the regulatory thinking at the time, consider the remarks by a speaker at the 1904 national convention of insurance commissioners who fulminated angrily about how rebating was "moral turpitude" and "professional suicide," comparable to "race suicide," although fortunately (in his view) the "higher class" of agents were "doing all in their power to eradicate it." He also complained that criminal laws against rebating were simply not working because juries would not convict, and he recommended that enforcement be transferred to insurance commissioners, who presumably knew moral turpitude when they saw it.

The economics of antirebate laws were defended on grounds that are shaky at best, namely, that insurance companies would stop paying high commissions if agents were forced to keep the money. But the proponents never spelled out what marketing technique insurers would use in place of high commissions to encourage the sale of particular policies. Insurers were paying some commissions exceeding 100 percent of the first year's premium in 1900, and they are still doing so today.

Antirebate laws were sold to the public as a means of preventing discrimination between two identically situated policyholders in terms of the amount of money they spent on insurance. That argument simply makes no sense. An insurance premium consists of two parts: the part retained by the insurer to pay claims, overhead, and other expenses (the "net premium") and the part returned to the agent in the form of a commission. The two figures are unrelated to each other, and giving one consumer a break on the commission does not affect the amount of insurance coverage each person is buying and will receive.

Suppose, for example, that two thirty-year-olds buy the same $100,000 policy, and one receives a rebate, but the other does not. The insurer holds on to the same net premium from both payments and will pay out $100,000 to the estates of both people when the time arises. The only difference will be that one customer bought a policy at a discount outlet and the other did not, which is usually not a cause for regulatory heartburn.

The discrimination rationale is odd since insurers routinely draw distinctions that nobody seems to mind—lower rates for nonsmokers being the most obvious—along with the less well-known practice of charging someone who buys a $500,000 policy a lower unit cost of insurance than someone who buys only a $50,000 policy although both people pose the same actuarial risk. The number of agents who shed a tear over the fact that affluent consumers get such a break probably equals the number who would denounce the practice of selling a policy with a 90 percent commission and not mentioning a virtually identical policy that pays only a 45 percent commission.

That is not the only defense of antirebate laws being offered today. Agents will tell you that insurance companies cannot survive if they have to pay out 105 percent of the first year's commission and the policyholder then cancels the policy after one year to buy a new policy and get a new rebate. Therefore, they claim, we need antirebate laws to maintain the financial solvency of the industry.

Let us consider that defense closely because it makes some assumptions about the behavior of consumers and insurance companies that are dubious at best. First, it is highly doubtful that consumers will stampede their life insurance

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agents' offices each year to buy a new policy from an agent offering them a rebate of, say, 5 or 10 percent. Consumers would not be getting something for nothing, even under Mr. Katt's proposal to rebate 100 percent of his commission, since they would still pay a flat rate for his time. Moreover, a new life insurance policy is a commodity that becomes more expensive with each passing year—a fact that discourages replacing one's policy now—and that would continue to be the case, even if rebating were legalized. Finally, the key premise of the insolvency argument is that insurance companies are too stupid to protect themselves against the practice of consumers' replacing one policy with another. That is fairly unlikely, particularly as the replacement of one policy with another now goes on, and insurers have been nimble enough to discourage cancellation of those policies after a year or two, for example, by levying a "surrender charge" of 100 to 125 percent of the first year's premium. Such practices deter consumers who are trying to build up the cash value of a policy from cancelling policies.

Apart from those generalized defenses of rebating, the insurance lobby also has a beef with the specific fee-for-advice system that Mr. Katt would like to offer. Under his system, they argue, clients could end up paying several hundred dollars for his advice and be rejected by the insurer because they fail the physical examination. Stick with a traditional agent, who will provide you with sound advice for free, they argue. But people routinely pay professionals for their advice without achieving the desired result. For example, if one hires a lawyer to get a zoning variance, and the application is rejected, he still has to pay the lawyer. Besides, if rebating were legalized, nobody would be forced to deal with an agent who rebates, and anyone who wants the "free" advice offered by traditional agents can keep doing business that way. That ought to be a decision made by the individual, not the state.

Perhaps the best answer to the industry's opposition is provided by the practical experience of what has happened (or not happened, despite dire predictions) in Florida and California, where rebates are legal.

Florida led the way, thanks to a 1986 ruling by the state supreme court that declared that antirebate laws violated an agent's substantive due process rights under the Florida constitution. California followed suit, with repeal of the antirebate laws tucked away as part of the Ralph Nader-endorsed Proposition 103, which the voters adopted in November 1988. No one has cited a single insurance company that has failed on account of rebating in those two states, nor does there appear to be a consumer revolt against the limited rebating being offered by agents in those states.

Peter Katt has challenged Michigan's antirebate laws in court on grounds that were ultimately persuasive in Florida. Although he lost the first round, the case is still pending on appeal.

While that suit was stalled in court, Katt tried a new tack to tell Michigan consumers about how to save money and get better advice when buying life insurance. He announced in his newsletter and newspaper interviews that he was licensed to sell life insurance in Florida, and he offered to provide clients his fee-for-advice, 100 percent rebate service if they traveled with him to Florida and conducted the transaction there. For some people at least, the savings they would realize under this proposition would more than pay for airplane tickets and a hotel room.

That move provoked the Michigan thought police. In July 1990, despite four prior staff assurances that what Katt was proposing was perfectly legal, Attorney General Frank Kelley and former Insurance Commissioner Herman Coleman decided that such information was dangerous for consumers to have. They warned that Katt would be charged with "solicitation"—which could lead to yanking his license—if he continued telling Michigan consumers how much money they could save in Florida.

As a result, Katt can tell people only that rebating is legal in Florida and that he can do business there, but he is forbidden to tell them anything else about a possible transaction that is perfectly legal in Florida. He has filed a First Amendment challenge to this censorship that is also pending.

It is at best ironic, when formerly repressive regimes are suddenly receptive to new ideas from abroad, that Michigan has chosen not simply to defend the antirebate status quo, but to try to muzzle the spread of ideas that could empower Michigan residents (and others) to make more informed choices about an important consumer product.

The apathy, ignorance, and avoidance that characterize consumer attitudes toward life insurance generally have allowed antirebate laws to continue unchallenged, despite the competition and added

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choice that would inevitably follow their abolition. Discounts and charging by the hour are facts of life in most professions. The question remains: why not in insurance?

Con Hitchcock
Public Citizen

Advancing the Cable-Telephone Company Debate

In the information services area, the forces of technology and international competition are forcing a shift in the way regulators look at the services the cable TV and telephone companies are allowed to provide. It no longer appears prudent to regulate future cable service and telephone service as two distinct products—one a mass media service, the other a common carrier service. As the digitization of information eliminates the transmission distinctions among voice, data, and video, it becomes increasingly difficult to separate industries such as cable and telephone on the basis of content; they are both competing transport facilities.

Recently, both cable and telephone companies have become more open about the potential synergies of their respective businesses. Telephone companies seem to be motivated to move into video services because projected earnings growth in their traditional telephone markets are low. Cable companies seem to be motivated to move into telephone and other information services to derive greater future earnings from their fiber and coaxial cable facilities.

An example of that synergy is the technical trial Bell Atlantic is conducting with Cablevision of Loudoun County, Virginia, using a new technology for delivering integrated digital voice and video signals over the same fiber optic cable. In addition, U.S. West and Tele-Communications, Inc., (TCI) are pursuing strategic joint venture agreements in the United Kingdom and contemplate further agreements outside of U.S. West territory. U.S. West, AT&T, and TCI are pursuing near video-on-demand trials in the Denver area. The cable industry has invested heavily to test the feasibility of providing personal communications over cable facilities. Thus, cable and phone companies are laying the groundwork to enter each other's business markets.

As innovations in fiber and compression technologies continue to improve the capacity of wireline facilities, the only remaining barriers to open competition between cable and telephone companies will be legal and regulatory hurdles. Thus, policymakers and regulators must continually evaluate the potential impact of those evolving technologies so that they can establish an integrated regulatory framework for the provision of video and information services.

Importance of the Debate

The key issue underlying the debate about what services cable and telephone companies should be allowed to offer relates to the modernization of the domestic telecommunications infrastructure. To promote efficient investment in that infrastructure, the United States must ensure that the markets for the provision of telecommunications and information services are open and competitive. In addition, the marketplace, not government edicts, should determine the appropriate technology mix. Government's role should be to ensure open, nondiscriminatory access as well as the reliability of basic telephone communication links and public safety.

There are several reasons for relying on the marketplace to determine the appropriate technology for modernizing the communications infrastructure. First, the marketplace must be free to experiment with other, new technologies that may meet the demands of consumers as efficiently as fiber optics. Indeed, advances in digital compression technology may make it possible to transmit video over existing copper facilities and thus could delay the need to deploy fiber optic cable to the home. For example, Bell Atlantic, New Jersey Bell, and AT&T announced that they would collaborate to test the use of asymmetrical digital subscriber line technology to provide new video services to schools in New Jersey. That technology allows video signals to be sent over copper wire with video quality comparable to that of video cassette recorders and audio quality comparable to FM radio.

Furthermore, the advent of new, mobile wireless technologies is forcing regulators to examine distinctions between cable and telephone company services. Mobile wireless communications

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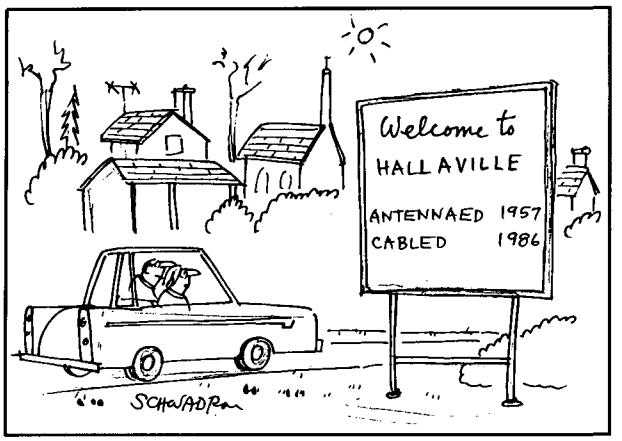

could be the wave of the future for voice and data connectivity. Future economies and technological efficiencies may result in voice services' being transmitted by narrowband radio facilities and video services' being transmitted by broadband, wireline facilities.

The unpredictable direction of future developments in technology and network architecture should compel the government to favor policies that allow the marketplace to function effectively. Only through a marketplace approach will proper infrastructure investment decisions be made. Regulators should not presume to know what consumer demand will be in the future or how that demand can best be met. Regulators should enable telecommunications service providers to test new services in the market and to offer customers the capabilities they desire with such services.

Another issue underlying the cable-telephone company debate relates to U.S. competitiveness in the global telecommunications marketplace. During the past several years, it has become increasingly apparent that to promote economic growth, other countries give high priority to the modernization of their telecommunications infrastructure. A key component of this modernization is the deployment of fiber optics in the telecommunications network. Japan's Nippon Telegraph and Telephone Corporation, which is investing heavily in digital switches and optical fiber, hopes to lay fiber optic cables to every Japanese home, school, and business by 2015. France has replaced nearly all of its analog phone switches with digital switches. France Telecom has attempted to jumpstart its Minitel information service by giving away home computer terminals. Germany, Singapore, and Hong Kong also have embarked on an aggressive fiber deployment program through their national telephone carriers.

Other countries' policies regarding the services cable and telephone companies can offer are more flexible than those in the United States. France and Germany have no cable-telephone company barrier. Britain has a modified restriction on cable-telephone company entry, but does not bar an affiliation through a separate subsidiary. Moreover, in 1994 British Telecom will be allowed to seek permission to provide programming to any unfranchised cable area. Although Japan and Canada have prohibitions on direct cable service by a telephone company, they do allow telephone companies to form consortiums with cable companies.

Because the AT&T antitrust consent decree (the Modification of Final Judgment) and the Cable Communications Policy Act of 1984 prohibit the Baby Bells from providing information services and cable video services, the regional Bell operating companies increasingly are making major investments in overseas cable ventures and telephone operations. Those companies currently have greater incentives and flexibility to invest overseas than to provide value-added services in the domestic local exchange markets. Their investment decisions are a result of regulatory restrictions. Policymakers and regulators need to be aware of those overseas incentives and should address that anomaly in a regulatory regimen as quickly as possible.

Regulatory Framework

When recommending substantive policies that should be pursued, as an FCC commissioner, I must operate within the statutory framework offered by existing law. Thus, I shall focus on issues that could be raised at the FCC and acted upon within the confines of the commission's authority under current rules and statutes.

Cable Act and Modified Final Judgment. Currently, telephone company entry into video and audio program delivery is limited by two documents: the Cable Communications Policy Act of 1984 and the Modification of Final Judgment that settled the government's antitrust case against the Bell System in 1982. The cable act applies to all telephone companies, with some rural exemptions. It generally prohibits telephone companies

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from owning cable systems within their service areas. A telephone company serving a rural area can obtain a waiver, but only if the cable service would be otherwise unavailable to the rural area.

The Modification of Final Judgment applies to the Bell operating companies and AT&T. Before July 25, 1991, the Modification of Final Judgment precluded the Bell operating companies from owning any cable systems, even those outside their service areas or in rural areas. On July 25, 1991, Judge Harold Greene lifted the information services restriction on the Bell operating companies and GTE. After that decision, the Bell operating companies have had more flexibility to operate cable ventures outside of their service areas; however, they still must comply with restrictions that prevent them from providing interstate or intrastate long-distance service between local access transport areas.

Congressional Action. Sen. Conrad Burns and Rep. Rick Boucher have introduced bills that seek to stimulate modernization of the telecommunications infrastructure by allowing telephone companies to provide cable service. Those bills seek the deployment of fiber optic cable throughout the nation by 2015. In addition, Rep. Edward Markey is drafting legislation that would allow the Bell operating companies to conduct research on, design, and manufacture telecommunications equipment. Rep. Jim Cooper has introduced a bill addressing the need for competition among facilities-based information service providers in the local exchange market. Sen. Ernest Hollings has also introduced legislation to lift the manufacturing restriction of the Modification of Final Judgment. Until any of those bills is signed into law, the FCC will continue to operate under the present restrictions of the 1984 cable act and the Modification of Final Judgment.

Regulatory Role

Given the current statutory, judicial, and regulatory restraints, regulators evaluating the appropriate incentives for investing in telecommunications infrastructure should consider three areas: local exchange competition; federal-state cooperation; and local exchange investment incentives in the context of the cable-telephone company debate.

Local Exchange Competition Initiatives. One way to bring a modern public network to fruition, with the capabilities and broad accessibility such a network entails, is to encourage competition among facilities-based service providers. At the same time, public policy should encourage continued investment in and modernization of the public switched network. Within that framework, regulators should find ways to let that market work, while simultaneously protecting other values society considers essential.

To address the competitiveness side of the equation, regulators should ensure that all information service providers are given the incentive to invest in developing infrastructure. Service providers other than the Bell operating companies, for example, Metropolitan Fiber Systems and Teleport, should have the opportunity to develop facilities-based communications services. The FCC has addressed competition, pricing, and access issues in decisions involving expanded interconnection, open network architecture that permits all users of a network to interconnect to specific basic network functions and interfaces on an unbundled and equal-access basis, and the price-cap regulatory scheme. Those initiatives have increased the degree of competition in the market for local exchange and information services.

What has not been done at the federal level, to the same extent as has been done at the state level, is to address the other side of the competitiveness equation—to grant the local exchange carriers more regulatory flexibility to compete in the marketplace of the future. But if the local exchange carriers are to remain economically viable, maintain earnings growth, and remain capable of serving their customers, they must see themselves as something other than a regulated vendor of network piece parts. To have a strong economic incentive to invest in their network, they must have the prospect of marketing unique, custom-tailored, end-to-end telephone and information services.

Greater Federal-State Cooperation. Regulators must promote a policy of closer federal-state cooperation to develop the regulatory flexibility needed to adjust to changing market conditions across the country. The FCC should play a more aggressive ombudsman role in addressing the concerns raised by state regulators, particularly regarding the thorny economic and political issues raised by the cost of fiber deployment and

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the concern for preventing cross subsidies. For example, regulators could conduct studies of economic return from fiber deployment if it is phased in on a strategic basis within the community and use the results to devise more innovative solutions to the issues surrounding infrastructure modernization and fiber deployment. Through cooperative efforts on the federal and state level, regulators will be able to devise effective, long-term solutions to the difficult costing and pricing issues associated with modernizing the infrastructure.

Investment Incentives. If regulators want to provide the local exchange carriers with an incentive to invest in the public switched network, they must see that those carriers have prospects for financial gain and some hope of controlling their destiny. That is the flip side of the policy debate surrounding local exchange competition initiatives.

One aspect of the infrastructure policy debate that affects the local exchange carriers' investment incentives is the cable-telephone company issue. The FCC cannot modify the cable-telephone company rules on its own. It must recommend to Congress whether the restrictions should be lifted. Within the confines of the cable act, the commission has allowed telephone companies to lease their lines and act as common carriers for other franchisees to provide cable service within their service areas. The FCC also has the ability to grant "good cause" waivers and rural exemptions. Under FCC rules, telephone companies may provide video programming outside their service areas, but the Bell operating companies cannot violate the consent decree's restriction on providing long-distance service between local access areas without a waiver.

Conclusion

The exact design of the future telecommunications infrastructure remains unclear. But uncertainty should not preclude progress. Regulators must continue to address the tough costing, pricing, and jurisdictional issues raised in the cable-telephone company debate. Also, federal and state regulators must work together to develop innovative models that can provide long-term solutions to the costing and pricing concerns raised by debates about modernizing infrastructure. Our country cannot afford to be deprived of a modern telecommunications infrastructure because of interindustry politics or fractured public policy debates. Regulators and policymakers must meld their concerns into a flexible regulatory model that will allow U.S. industry to compete effectively in the global marketplace.

Andrew C. Barrett
Federal Communications Commission

Politically Correcting Pesticide Exports

In the sub-Saharan rain forests of Zambia, a U.S.-made pesticide is being applied to eucalyptus seedlings to save them from the ravages of termite infestation. Eucalyptus trees grow rapidly and therefore are useful not only to Zambian, but to worldwide reforestation efforts. The same pesticide is also being considered by the World Health Organization as a substitute for DDT to kill the mosquitoes that carry malaria. It is also being used in former President Jimmy Carter's Global 2000 Program because it dramatically increases yields of vital crops in underdeveloped countries and at the same time reduces growers' chemical exposure.

The main ingredient or "active" chemical for this pesticide is produced only in Institute, West Virginia. But, like many other U.S. made pesticides, this product, known as carbosulfan, is currently among a group of pesticides that are the target of legislation to prevent their export from the United States. If so-called circle-of-poison legislation passes Congress, chemicals that are not registered with the Environmental Protection Agency for use in the United States could not be exported for use in other countries. Depending on estimates, the restriction could include as many as sixty-six separate products and could account for upwards of $450 million in annual export volume from the United States and for the loss of approximately 23,000 jobs. Although registered in forty other countries, carbosulfan would have to be produced offshore or to obtain a U.S. registration for foreign growers to continue to benefit from its use.

Led by the international environmental organization Greenpeace, the coalition supporting the legislation argues that pesticides that have not

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been proven safe for use in our country should not be exported to unsuspecting third world countries. Ironically, many of the proponents of the legislation are also at the forefront of efforts to encourage worldwide reforestation, to find substitutes for DDT in the fight against malaria, and to protect third world growers from needless chemical exposure.

Nonetheless, proponents of this particular form of environmental imperialism argue that those unregistered pesticides may find their way back onto U.S. dinner tables in the form of illegal pesticide residues on imported foods and thus close a "circle of poison." The coalition also contends that unsuspecting farmers in third world countries can become the victims of those "illegal poisons." Meanwhile, they argue that domestic farmers are put at an unfair competitive disadvantage because they cannot use pesticides that are not approved for use here.

Moreover, recognizing that such a law would exceed currently accepted international standards governing the trade of pesticides, circle-of-poison advocates have suggested that Congress should enact such a prohibition so that the United States can set the international example. Proponents thus argue that it has become a moral imperative for the United States to judge what pesticides made in our country are suited for use in other countries as a way of setting the international paradigm.

Although approximately 75 percent of the world's pesticides are produced offshore, we are to impose our postindustrial, risk-averse standards on emerging industrial countries, where plague and famine remain more than just Biblical scourges. Under that scenario, barring the export of any unregistered U.S. product becomes the "politically correct" approach to exporting pesticides.

The Worldwide Benefits of U.S. Pesticides

Indeed, global pesticide trade is a policy area where the United States can and should provide leadership. But leadership requires carefully considering the full consequences of public policy. And the consequences of a far-reaching ban on U.S. pesticide exports may prove environmentally as well as economically shortsighted.

Under the U.S. law that governs pesticides, the Federal Insecticide, Fungicide, and Rodenticide Act, it is unlawful to sell, distribute, or use a pesticide in the United States that has not been registered for use here by the EPA. But that law does not prevent the export of chemicals that may be made here, but are used to treat pest, soil, or other climatic conditions that are endemic to other countries. While the act requires companies to disclose the country to which those products are exported, it clearly recognizes that the importing country can best judge its own agricultural and environmental conditions.

Such was the case in Zambia and throughout central Africa upon discovery of the U.S.-made product carbosulfan. The role of eucalyptus trees in overcoming problems associated with deforestation is important in developing economies, where trees are used for fuelwood as well as for building materials and industrial purposes. In fact, the developing countries' consumption of fuelwood is estimated to account for over half of the wood used in the world each year.

The demand for additional supplies of fuelwood is so enormous that to meet the demand in sub-Saharan Africa alone, the current reforestation effort must increase by one hundredfold. Yet, one of the barriers to faster reforestation is termite infestation of eucalyptus trees. Both in Africa and in South America, different, but no less deadly species of termites are known to ravage eucalyptus seedlings.

In attempting to control those termite scourges, developing countries have traditionally turned to the use of pesticides known as organochlorines. But recently some of those products, such as aldrin and dieldrin, have come under question and have been banned outright for use in some countries. In light of those circumstances, the Zambian government chose to use the unregistered U.S. product carbosulfan, which it regarded as safe to users and the environment, in its reforestation effort. Other developing nations have also considered environmental, climatic, soil, and pest conditions as well as human health and safety needs to determine the appropriateness of using specific pesticides.

Those decisions belie the environmental imperialists' concept of the underdeveloped nations' capacity to make informed judgments for themselves. For example, a registration application for the very same carbosulfan was denied in Malaysia owing to specific concerns regarding its impact on their unique environment. Thus, the decision to allow or disallow the use of a pesticide in less developed countries is not, as some in the advanced countries would have us believe, based simply on product efficacy. To assume such, as

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circle-of-poison legislation suggests, is unjustifiable. When the worldwide losses of food before harvest are estimated to be as high as 35 percent and when over 13 million people will die from starvation this year, it is presumptuous for the United States to dictate third world use of agricultural technology that might save lives or improve local environmental conditions.

The U.S. Pesticide Registration Labyrinth

It is mistaken to suggest that U.S. pesticide registration standards are more stringent than those in other advanced countries. According to the agricultural chemicals industry, it typically takes eight to ten years and costs manufacturers $35 million to $50 million to bring a new pesticide to market under U.S. registration standards. The lengthy registration process only begins after the significant investment to discover the single effective molecule from approximately 10,000 tested that would appear to have some promise as a commercial pesticide.

Most of the registration expenditure is for the range of animal feeding, toxicology, and environmental effects studies required by the EPA. Because of the lengthy and ill-defined nature of the U.S. pesticide registration process, it is not uncommon for a product to become registered in several other advanced countries while it is awaiting approval in the United States. For example, the Dow product haloxyfop, an herbicide to control wild grasses, has obtained registration in thirty-four countries including Germany, Belgium, France, Norway, and Australia while application has been pending before the EPA. Dow has submitted over seventy-two research reports to the EPA (some with as many as 110,000 separate data points), engaged over eighty of their own scientists, and used twelve top scientific laboratories, but has yet to receive a U.S. registration.

Similarly, in 1983 the FMC Corporation began the long, expensive process of obtaining a registration for carbosulfan, the very product that is now saving eucalyptus trees in the sub-Saharan rain forests. FMC had already spent several years researching and developing the product before beginning the EPA registration process.

In its labyrinthine complexity, the U.S. pesticide registration process approximates an amusement park hall of mirrors, full of twists and turns, in which a potential registrant often retraces its steps and seems to be always going in circles. The EPA often calls for redundant health and environmental effects testing, studies to corroborate earlier studies, and environmental effects testing on specific ecosystems. The regulatory definition of what constitutes an adequate test is sufficiently ill-defined to allow the EPA to challenge findings of studies even after the agency has approved the test protocol and the laboratory where the research is being done.

By 1987, after some $15 million in testing, the EPA had concluded that carbosulfan was nonmutagenic, had no teratogenic effects, had no adverse effects on reproductive performance, was not carcinogenic, and had no delayed effects on neurological activity. Yet, the EPA continued to require additional testing of carbosulfan.

Meanwhile, during that same four-year period, using the same test data, FMC achieved registrations in eleven countries that are members of the Organization of Economic Cooperation and Development. As was found in a recent EPA analysis of the comparability of OECD registration standards with those in the United States, OECD countries typically require testing for acute toxicity, chronic toxicity, carcinogenicity, teratogenicity, mutagenicity, and neurotoxicity. They test for acceptable residue levels on crops and for toxicity to birds, fish, and other wildlife. But registration procedures in those countries tend to be better defined with clearer end points, as opposed to the much criticized, open-endedness of the U.S. system.

Today, the registration application for carbosulfan, like many other U.S.-made pesticides, is still pending at the EPA. But faced with an expenditure of up to an additional $20 million for test data to satisfy EPA requirements, FMC has chosen not to pursue its pending registration. The decision is based on weighing additional registration costs against the prospect of a viable domestic market—a market that has during the registration process become crowded with additional competition.

The complex, time-consuming nature of the U.S. registration system is only one of several reasons why a product made in the United States may not be registered here. In many cases pesticides are produced for crops not grown commercially in the United States or for soil, climatic, and pest conditions not found here. Manufacturers thus do not seek EPA registration.

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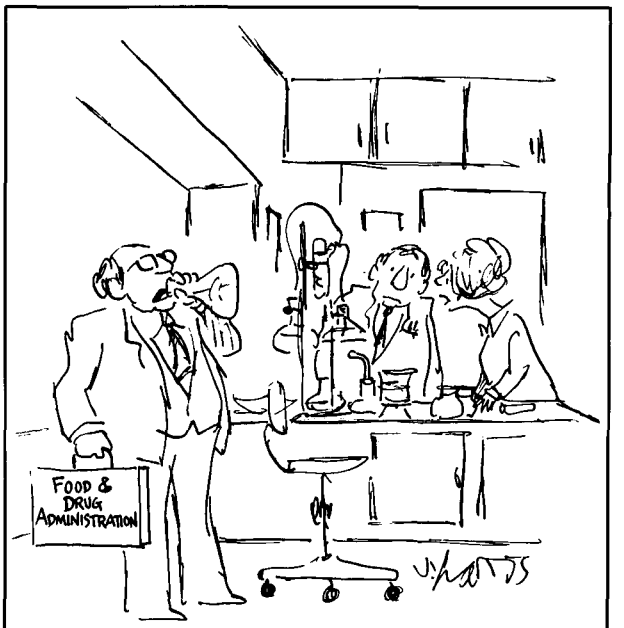
The Challenge to Sovereignty

Advocates of unilateral restrictions on American pesticide exports contend that the regulatory infrastructure of third world countries is inadequate to judge the potential health or environmental consequences of specific products. But typically, the developing countries require pesticide imports to be registered in one of several advanced countries—not necessarily the United States. For example, developing countries in Africa tend to require registration in their former colonial overseers.

The presumption that the United States has the most exacting pesticide standards is not necessarily correct. For example, West European countries have more stringent requirements regarding the effects of pesticides on groundwater than those imposed by the EPA. In addition, there are other highly specific, localized differences among the testing requirements of various countries. For example, Australia has extensive soil residue and monitoring requirements. Canada requires strict wildlife impact assessments for registration. The Japanese emphasize fish metabolite studies. Norway requires that the product pending registration demonstrate that it is as least as efficient in pest eradication as any competing product currently on the market. The United Kingdom focuses on the potential for aquatic toxicity.

In attempting to impose risk-free standards on third world countries, the United States fails to consider the fact that developing countries view the use of agricultural technology in different terms. Although developing countries need pesticides to fight malnutrition, the benefits of pesticide use are not limited to food production. Pesticides also play an important role in the control of pests and rodents that cause epidemic disease. For example, in India, Pakistan, and eighteen African countries, approximately 10 million people each year succumb to Guinea worm, a devastating infection that causes extreme pain and disability. Recently, rice farmers in southeastern Nigeria have lost more than $20 million in profits annually because so many of them were incapacitated by the disease.

Even in those cases where pesticides have lost their registration in what the EPA refers to as a cancellation proceeding, the benefits of continued use in other countries is often compelling. DDT, which has been banned in the United States since 1972, is still produced in at least six countries for use around the world and remains perhaps the most potent weapon available against the mosquito species that transmits malaria.



"I thought he would run all sorts of scientific tests."

A unilateral export ban by the United States will not result in cessation of the use of identical or similar products abroad. Other countries will continue to impose their own versions of risk-benefit analysis to the pesticides they intend to use on the basis of their own unique conditions. And they will be able to pick and choose widely from a variety of pesticides not made in the United States.

Defining the Issue

So, what then do the authors of the circle-of-poison legislation hope to accomplish? Is there a threat to the U.S. food supply, foreign growers, or U.S. farmers resulting from our export of those products? And if there is, how can we stop it when those pesticides or less safe alternatives will continue to be made and used abroad?

The Food and Drug Administration is responsible for inspecting and analyzing imported food. A major impetus for circle-of-poison legislation seems to be the discovery that 3.5 percent of the 18,000 imported food samples taken by the FDA in its annual monitoring and surveillance program reveal pesticide residues that violate U.S. standards. This means that those products are not within the legally allowed "tolerances" for pesticide residues.

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The EPA established tolerances for pesticides on the basis of stringent risk assessments that purport to show how much of a specific pesticide residue an individual can safely consume over a lifetime. The agency establishes an acceptable daily intake level to account for the cumulative effect of consuming several different products with the same pesticide. U.S. pesticide manufacturers must obtain a legal tolerance on every food commodity on which the product is used. Because the pesticide manufacturer cannot violate the total intake level for his product, a pesticide may have a tolerance for use on corn, but not on soybeans. The pesticide producer must make decisions on product use on the basis of anticipated consumption and mathematical determinations of relative risk.

In this context, it is therefore noteworthy that while 3.5 percent of the imported foods sampled violated standards, only one-half of one percent contained a pesticide residue for which there was no established tolerance for any food commodity. Thus, 3 percent were samples for which tolerances existed on other foods (2.5 percent) or for which the residue level detected exceeded the established tolerance for that specific food (.5 percent). Nonetheless, in those latter two categories the pesticide itself was clearly judged to be safe and had a tolerance. Thus, the entire commotion around the circle-of-poison debate results in large part from only 90 (.5 percent) out of 18,000 products sampled for which there were no tolerances on any crop use. And even there a tolerance petition may be pending.

But even if one believes that a problem of that magnitude constitutes a priority public policy issue, its solution does not lie in banning exports of U.S.-made chemical products. Our pesticide production is about one-fourth of the world's total. Of the top ten pesticide manufacturers, only four are U.S.-based. Thus, we can expect the availability of products that do not meet U.S. standards to grow if U.S. pesticide exports decline. In addition, we can expect circle-of-poison legislation to shift additional U.S. production abroad and cause American farmers to rely increasingly on imported pesticides. Since imported pesticides cost on average 40 percent more than U.S.-made products, farm production costs would rise and make U.S. farmers less rather than more competitive. Thus, U.S. farmers will not have a level playing field.

Similarly, a ban on the export of unregistered pesticides is not an effective policy approach to improving the safe use of pesticides by farmers abroad. To encourage the safe handling and use of pesticides, particularly in third world countries, pesticide producers and a range of international organizations including the Food and Agricultural Organization and the United Nations Environmental Program have initiated stewardship programs that provide training manuals, multilingual label instructions, and grower application seminars.

A Multilateral Solution

The food safety, worker exposure, and level playing field issues raised by advocates of circle-of-poison legislation do not lend themselves to a simplistic unilateral solution. In addition, U.S. companies should not be expected simply to set an example that other nations will not follow. Pesticide export policy should address how best to inform nations of the risks and benefits associated with pesticides that are used on foods grown domestically or imported but that may be made elsewhere. Such an approach respects the capability of sovereign nations to make decisions for themselves.

At the heart of such a solution to the problem is the Food and Agricultural Organization's "International Code of Conduct on the Distribution and Use of Pesticides," which provides for the exchange of information between countries that are shipping severely restricted or extremely hazardous pesticides. Specifically, the code enables an importing country to refuse shipments of pesticides that are banned or severely restricted so as to protect human health or the environment.

If the United States is deficient in complying with that policy, the deficiency stems from the EPA's current inability to stop the shipment of pesticides from the United States that are denied by an importing government. For example, it is still possible for manufacturers to ship chlordane or heptachlor, chemicals that have lost their U.S. registration, from U.S. ports to say Honduras, even when the Honduran government indicates that it does not want to receive those shipments. The EPA should have the authority to impound such shipments so that the United States can comply with the Food and Agricultural Organization's prior informed consent system.

The United States should also strengthen its current system for monitoring the number and type of unregistered pesticides shipped from our shores.

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Current law requires U.S. pesticide manufacturers to receive a purchaser acknowledgment statement for shipments of unregistered pesticides. That statement is used to notify foreign governments that such a pesticide is being exported to their country. But the GAO recently reported that the EPA received statements for only 26 percent of the 262 unregistered products exported from the United States from 1985 to 1987. While it may be difficult in some instances for U.S. producers to obtain such statements, they should be in a position to voluntarily report what unregistered chemicals are exported, where the products are used, and on which crops they may be found.

In addition, the United States should increase the quality and quantity of U.S. food import inspection. Currently, the FDA has pesticide residue detection methods for approximately 270 different pesticide residues that may appear on imported U.S. foods. Critics believe that this is woefully short of the total number of pesticides that may show up and that many dangerous chemicals may escape FDA detection methods. To assist the FDA, U.S. pesticide producers should provide the agency with a means of detecting residues of those "unregistered" pesticides that it manufactures here but exports abroad. Such detection methods can be both expensive and time-consuming to develop. In many cases, however, they already exist, and where they do not, their development will help to establish consumer confidence that any imported foods with violative residues from U.S. exported chemicals can be detected.

The amount of FDA monitoring ought to increase as well. The FDA has been criticized, perhaps unjustifiably, because its total sample of imported food shipments represents less than 1 percent of what we import. The FDA, however, has developed considerable expertise in targeting specific types of shipments where violative residues may be found. The agency conducts special selective surveys each year on certain target crops and chemicals. For example, in 1989 the FDA focused its efforts on aldicarb, a widely used pesticide that is under review in the United States. But at the same time, a major increase in the number of samples taken by the FDA would send an unmistakable signal to foreign exporters on the intent of the U.S. government to crack down on those who seek to violate U.S. import laws.

Finally, the United States should play a leadership role through its ongoing effort to harmonize international food safety standards. Discussions under the current round of GATT negotiations are focusing on harmonizing international food tolerances. Indeed, a system for establishing internationally accepted standards for pesticide residues on foods already exists under the auspices of Codex Alimentarius Commission, a subsidiary body of the Food and Agricultural Organization and the World Health Organization, comprising government officials from some 130 countries. While the Codex system contains over 2,000 maximum residue limits, those standards act only as general guidelines that countries may now ignore if they choose to do so. If a truly level playing field is to be created in agricultural as well as pesticide trade, then such an international system of broadly accepted food safety standards must be agreed to internationally and enforced at a minimum in the advanced countries.

Unfortunately, taking a series of discreet actions such as providing stop-shipment authority, requiring a means of residue detection, stepping up FDA enforcement, and harmonizing international food safety standards does not lend itself to the same impassioned political rhetoric as does promoting the circle-of-poison approach to curtailing the export of pesticides. But, as with other issues commanding international solutions to global environmental concerns, the United States should resist the domestic political temptation to superimpose its own standards on the world through an ill-conceived, unilateral approach that ignores the sovereignty of other nations and the reality of the global marketplace. Politically correcting pesticide exports requires mustering the domestic will to approach the issue in a way that recognizes the varied benefits pesticides play internationally and the different standards other countries use to judge their safety.

Gerald R. Prout
FMC Corporation

EPA Steps up "Inforegulatory" Radon Campaign

The Environmental Protection Agency has stepped up its "inforegulatory" campaign against radon with its June publication of a revised *Citizens' Guide to Radon*, which suggests that the current "action level" be reduced 100 percent, from

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four to two picocuries per liter. "Our research and the experience of private mitigation firms shows levels can be reduced below two picocuries per liter 80 percent of the time," Steve Page, acting director of the EPA's radon office, said.

The EPA's campaign does not enforce the four picocuries per liter "action level," although it promotes it through an arsenal of public relations activities. The "action level" does not qualify as a regulation as such, for radon, as a natural danger, presents the EPA with what officials have described as a "nonregulatory challenge." Consequently, the EPA has an "inforegulation" program—a word borrowed from "infotaintment" programs on television. As such, the *Citizen's Guide* was not reviewed by the Office of Management and Budget and the Council on Competitiveness, although the cost of meeting the action level has been estimated at $1 trillion.

"It may cost a trillion dollars as you say," an OMB spokesman said, "but since it's not a regulation, we don't review it." The federal deficit is currently $2 trillion; federal spending on urban poverty in the quarter century between 1965 and 1990 has been estimated at $3.38 trillion.

The trillion dollar figure comes from both internal and external criticisms of the EPA, notably "Radon Today: The Role of Flimflam in Public Policy" by Philip Abelson (*Regulation*, Fall 1991) and "Indoor Radon: Exploring U.S. Policy for Controlling Human Exposures" by William Nazaroff and Kevin Teichman, a top EPA official (*Environmental Science & Technology*, June 1990). Both make essentially the same points, but Teichman and Nazaroff's comments also cast doubt on Page's assertion that mitigation levels can easily be reduced below two picocuries per liter. "Most of the mitigation experience in the United States is too recent to yield reliable experience on the long-term efficacy of remedial measures," they state. "Substantial improvements in radon measurement and mitigation . . . even if technically feasible, would be prohibitively large, on the order of $1 trillion [roughly estimated at $10,000 to $16,000 per household times 70 million households]."

On the benefit side of the cost-benefit equation, the EPA's estimates of the lives saved, as a consequence, has varied from 43,200 to 16,000 a year. The actual range is between 500 and 1,450 among nonsmokers, estimate the Lawrence Livermore Laboratory's Nazaroff, perhaps the most widely cited authority on radon in the scientific literature, and Teichman, coordinator of the EPA's indoor air quality research program. "[M]ore than 90% of the lung cancer risk associated with radon could be controlled by eliminating smoking without any changes in radon concentrations," Nazaroff and Teichman wrote.

Nazaroff and Teichman called for the steady development of radon expertise "rather than a boom-bust cycle . . . reassessment through a means that discourages discussion and debate." No such discussion and debate have been given radon within the agency although EPA administrator William K. Reilly recently called for a complete revamping of the agency's personnel policies to develop a "coherent agenda to guide scientific efforts throughout the agency," based on agency-wide peer review.

The EPA, however, has not formally reviewed the scientific literature on radon. An initial survey of dozens of scientific studies both in the United States and abroad by the Congressional Office of Technology Assessment reveals little evidence of significant risk from residential radon. Instead, the EPA has unleashed its arsenal of public relations activities, designed in the words of Margo T. Oge, the EPA's director of radiation programs, as "prudent and responsible public health policy" (*Science*, March 6, 1992).

Between $18 million and $20 million are being spent on the radon program, according to Page. Half is going for research and remediation activities. The other $9 million to $10 million cover for "clever and humorous" public service announcements on television (*EPA Radon Bulletin*, Spring 1992), employment of state radon program directors and development of "high risk targeting strategies," grants to American Lung Association affiliates, building design competitions, a National Civic League "participatory government" handbook, National Association of Counties workshops and calls for strengthened federal radon legislation (including mandatory radon real estate disclosure and school testing), a draft *Homebuyer's and Seller's Guide to Radon*, and an American Medical Association documentary plus T-shirts, baseball caps, and adhesive jar cap removers emblazoned with the slogan, "Radon—Gets You Where You Live; Call or Test Today, 1-800-SOS-Radon"—all paid for by the EPA.

Coincidentally—or ironically—EPA administrator William K. Reilly has recalled the late President John F. Kennedy's "invoking the wonders of science" in calling for "a coherent agenda to guide

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scientific efforts throughout the agency." Reilly prefaced his proposals for revamping the agency before the House Committee on Science, Space and Technology with the observation: "Environmental issues garnering headlines and turning into the latest horror story on the evening news often influence environmental policy in this country. . . . Public policies therefore sometimes seem to lack ballast and as a result veer from one point of view to another, seemingly without an underlying rationale. . . . These horror stories reflect the difficult and often contentious role of science in a regulatory agency such as EPA."

There is no dispute, however, as Reilly said, "Our society is being forced to make enormously costly decisions on a very small science base. . . . American investment in environmental control and clean-up is substantial—on the order of $115 billion a year, nearly 2 percent of gross national product."

The costs of radon mitigation, unlike other environmental pollutants, are not borne by manufacturers and distributors of products. Radon presents instead "a nonregulatory challenge" in the words of A. James Barnes (*EPA Journal*, August 1986). "The indoor radon problem does not lend itself to a regulatory approach. First of all, radon is a naturally occurring substance. It unmistakably poses a risk, but a blameless risk. There is no one at whom one can point an accusatory finger and say, 'You did this, you fix it.' "

Barnes underestimates "creative legal minds," according to Washington, D.C., attorney Laurence S. Kirsh, an authority on legal aspects of indoor air pollution. "Creative legal minds can construct new claims of causation that point the finger at some solvent party," Kirsh wrote. "A plaintiff can sue the company that weatherized the building so tightly that radon could not escape, or the contractor who laid the foundation with the crack that allowed the radon to seep into the building. . . . Of course, in those jurisdictions in which the building is considered a product subject to strict liability law, a plaintiff could allege that a building with excessive interior concentrations of radon itself is a defective product for which its builder is strictly liable."

The draft homebuyers' guides, support for strengthened federal legislation, "participatory government" handbooks, and school programs create "state of the art" knowledge that can and will be factored into real estate transactions as well as insurance costs. The Indoor Radon Abatement Act currently calls for efforts to reduce indoor radon levels to those prevailing outside. That is inherently impossible since building structures, by their very nature, trap radon gases coming out of the earth. In addition, legislation that would make radon disclosure mandatory in most real estate transactions and require school testing has passed the Senate and is pending in the House.

"It started with a simple case of peer review."

The basic reforms urged by Reilly, if implemented now, might substantially reduce, if not eliminate, those costs by focusing the EPA's emphasis on science rather than on regulatory or "inforegulatory" activities. Perhaps the two most significant reforms are publishing an agency "Science Agenda," "listing the priority issues that will become the focus of EPA's science activities," and instituting an agencywide peer review policy and system that will "require independent, external review of all major science projects . . . to ensure research and field studies are planned with the outside science community."

The most sweeping and comprehensive change would be the most basic one—establishing a career track for scientists and engineers "based solely on the quality and quantity of published science." Advancement beyond midlevel positions—GS-12 and GS-13 levels—into senior and

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supergrade civil service positions—GS-14 through GS-18 levels—is currently restricted to management positions. Only one scientist is reported to be employed at the GS-15 level, the top of the regular career service. Many scientists report to superiors with bachelor's degrees in English and the social sciences, superiors who have been known to take advantage of rank to attend scientific conferences in Europe and other attractive locales.

Further, under Reilly's proposal the agency, recognizing its "lack of a critical mass of externally recognized scientists," would plan to recruit "four to six research scientists and engineers with world-class reputations." The chosen researchers would occupy the "equivalent of several 'endowed chairs of science.' " Informal recruitment is supposed to begin immediately for positions in "global climate, biotechnology, systems ecology, toxicology, biological diversity, and epidemiology."

In addition, to ensure that policy decisions "are informed by a clear understanding of the relevant science," science advisors would be appointed for the administrator, the assistant administrators, and regional administrators of the agency. The primary purpose would be "implementing our new peer-review policy and documenting its effectiveness."

Acceptance of peer review could bridge a bitter schism, known as "the lawyers vs. the scientists," which has divided the agency since it was first created by executive order of then President Richard M. Nixon a generation ago. The agency still lacks an organic law and, consequently, responds to the often media-driven demands of eighty-two congressional committees and subcommittees.

The unusually candid comments of the EPA Science Advisory Board members who researched and wrote the report on which Reilly based his recommendations underline the significance of peer review, in both policy and personnel matters. Dr. Raymond C. Loehr of the University of Texas, Dr. Bernard Goldstein of Rutgers, Dr. Amil Nerode of Cornell, and Dr. Paul G. Riser of the University of New Mexico wrote: "EPA has not always ensured that contrasting, reputable scientific views are well explored and well documented from the beginning to the end of the regulatory process. In addition, the agency is perceived to have a conflict of interest because it needs science to support its legal activities. The legal process fosters the presentation of the extremes of scientific opinion. This runs contrary to the preferred process of developing consensus within the scientific community."

The advisory board also pointed out that "EPA's science is *perceived* by many people, both inside and outside the agency, to be adjusted to fit policy." They indicated that the scientist or decision-maker could make such "adjustments" consciously or unconsciously. In addition, they noted, "EPA scoping studies or other preliminary assessments . . . sometimes escalate into regulatory policies with no further science input, leaving EPA initiatives on shaky scientific grounds and affecting the credibility of the agency."

One comment, more than any other, illustrates how far the agency must go before it can gain credibility within the scientific community and also serves as a damning indictment of past—and apparently current—conditions and circumstances. The EPA Science Advisory Board asserted, "The agency must promote an atmosphere in which the scientific staff feels free to express conflicting opinions and judgments *without fear of reprisal*" (emphasis added).

"The fact that fear of reprisal even has to be considered illustrates the depth of the problem," the U.S. Geological Survey's Dr. Malcolm Ross, a longtime critic of the agency's asbestos policies, said. "Getting the mothers to form vigilante mobs and storm the school committees" formed the basis of the EPA's policy direction for years, according to former EPA administrator William Ruckelshaus. The EPA now officially encourages management-in-place asbestos programs rather than removal as "the final solution." Nevertheless, both the Library of Congress and the Smithsonian Museum, located less than a mile away from EPA headquarters in Washington, have been forced to close down facilities in recent months because of panic over asbestos.

"What is really important about science is that it's constantly changing," Ross said. "Scientists, of course, should be free to express opinions about the changing science. But if there isn't any mechanism to make regulation reflect the changes in science, it just isn't useful—no matter how 'wonderful' it may be. We'll always remain stuck in the time period when regulations were first formulated, regardless of new scientific knowledge. There'll never be an open atmosphere; we'll always be stuck in the back rooms."

Ross, a former president of the Minerological Society of America, pointed out that "as matters now stand, it takes an act of Congress or a court

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decision to change an EPA rulemaking." He concluded that if EPA policies do not reflect the science, "the 'wonders' of science Reilly called for in his proposal are just so much Alice in Wonderland."

Michael J. Bennett
Author, The Asbestos Racket

The Costs of Regulation (continued)

Several issues ago, in this column, I reviewed the major study by Robert Hahn and John Hird on "The Costs and Benefits of Regulation" (*Yale Journal on Regulation*, Winter 1991). That study concluded that the annual *net* cost of federal regulation was about $44 billion in 1988. My review of that study and other types of evidence led me to conclude that "the upper bound on this cost may be as much as 10 times higher." Several other recent studies, fortunately, have contributed to a better understanding of the issue. We are still far short of the type of information that would be necessary to establish a regulatory budget, but progress is being made.

The Total Cost of Federal Regulation

Our friendly competitor, the National Chamber Foundation, recently published a study of "The Costs of Federal Regulation" (*Journal of Regulation and Social Costs*, March 1992). That study was prepared by Thomas Hopkins, the former deputy director of the OMB Office of Information and Regulatory Affairs and now a professor at the Rochester Institute of Technology. The Hopkins study used the two major prior studies (by Robert Litan and William Nordhaus for 1977 and by Robert Hahn and John Hird for 1988) as building blocks but differs from those studies in three important ways:

- the Hopkins study focuses on the *total* costs of federal regulations, not the difference between the estimated costs and benefits
- Hopkins also includes an estimate of the costs of "process regulation," the annual cost of the paperwork burden imposed by the federal tax system and regulations

Table 1: Annual Costs of Federal Regulations

Type of Regulation	1977	1990	2000
	Billions of 1988 Dollars		
Environment	41	99	167
Other Social Regulations	25	29	47
Economic Regulation			
Efficiency Costs	87	46	46
Transfer Costs	181	95	95
Process Regulation	100	122	137
Total	433	392	492

- the Hopkins study also provides rough estimates of the total annual costs of federal regulations for each year from 1977 through 1990 with projections (based on *existing* regulations) through 2000.

This new study, by its nature, reflects most of the limitations of the prior studies. Most important, estimates of the costs of regulations are subject to considerable error, and some types of federal regulations are not covered. There are several important reasons, however, to focus on the total costs of regulation:

- the total costs of regulation are more nearly comparable with federal budget outlays
- estimates of the benefits of regulations are subject to substantially larger errors than the estimates of costs, and
- most important, there is considerable uncertainty about the extent to which the transfers resulting from economic regulation are offset by the costs (in lobbying, litigation, and campaign contributions) to gain or avoid political approval of these regulatory transfers.

For these reasons, the Hopkins study should be regarded as a complement, not a substitute, to the several prior studies on which it was based.

The bottom line is that the total cost of federal regulation was about $400 billion in 1990, around $4,000 per household. The larger set of results from the Hopkins study are summarized in Table 1.

Those results reflect five general patterns. The cost of federal environmental regulations more than doubled since 1977 and will continue to increase rapidly through 2000. The cost of other federal social regulation increased slowly since 1977 but will increase more rapidly through 2000.

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The substantial reduction of economic deregulation since 1977 reduced both the efficiency and transfer costs by about 50 percent. The costs of federal process regulations are large but have increased, and are expected to increase, at a slow rate. The total costs of federal regulation declined about 10 percent since 1977 but are expected to increase about 25 percent by 2000.

The Hopkins study, in summary, is a major step toward developing a regulatory budget. Those who are interested in more detail should read the full study and the major prior studies on which it is based.

The Effects of Regulation and Deregulation on Economic Growth

Two other recent studies provide much more accurate estimates of the effects of specific regulations or deregulatory measures on economic growth.

An article by Dale Jorgenson and Peter Wilcoxen, two Harvard economists, provides the most careful estimates of the relation of "Environmental Regulation and U.S. Economic Growth" (*RAND Journal of Economics*, Summer 1990). That study provides detailed estimates of the effects of environmental regulation for thirty-five industry groups as well as for the total U.S. economy. The authors conclude that environmental regulations reduced the annual growth of real GNP by .19 percent from 1973 to 1985 and that the long-run cost of those regulations implemented by 1985 is about 2.6 percent of GNP. That estimated cost is about one-third higher than the EPA estimate on which the Hopkins study was based. Environmental regulations implemented since 1985 would increase the estimate; the Clean Air Act Amendments of 1990, for example, are expected to cost around .5 percent of GNP when fully implemented. The annual cost of environmental regulations approved to date may already exceed $175 billion.

Finally, a January 1992 study by the Interstate Commerce Commission provides the best estimates of the effects of the several deregulatory measures initiated beginning in the late 1970s on the productivity and real output prices of the affected nonfinancial industries. That study was supervised by Howard Face, the director of the ICC Office of Economics. Those estimates are based on the revised data on gross product by industry through 1989, prepared by the Department of Commerce and released in April 1991.

Table 2: Effects of Deregulation on Specific Industries

Period	Productivity R	Productivity D	Real Prices R	Real Prices D
	Annual Percentage Change			
Industry				
Railroad	4.2	6.5	0.0	−6.2
Trucking	−2.5	0.9	3.3	−2.8
Airlines	−0.8	2.1	2.2	−3.4
Ocean Shipping	−1.5	−0.2	1.4	−6.1
Utilities	−1.4	−0.4	5.7	−2.5
Pipelines (except gas)	−0.1	0.3	9.5	−5.4
Telephones	3.4	0.8	−2.8	−1.9

The results of that study are summarized in Table 2. The productivity measure is the annual percentage change in total factor productivity (including labor, capital, and intermediate inputs). The real price measure is the annual percentage change in output prices minus the general inflation rate on gross domestic product. For each industry, the two periods are from 1978 to the year of partial or full deregulation (R) and from that year through 1989 (D).

The patterns of the results are striking. For every industry other than telephones, total factor productivity increased at a higher rate (or declined at a lower rate) in the period since partial or full deregulation. Moreover, the change in productivity growth was highest for those industries (railroads, trucking, and airlines) for which deregulation has been most complete. In addition, real output prices declined for every industry since the year of partial or full deregulation; for telephones, however, the decline in real prices was not so high as in the years before partial deregulation. That evidence should be sufficient to end the recurrent pressures to reregulate some of those industries. More on those issues in the summer issue of your favorite magazine.

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Policyholder Runs, Life Insurance Company Failures, and Insurance Solvency Regulation

Scott E. Harrington

Increases in the frequency and severity of insurance company insolvencies have led to intense debate over whether solvency regulation by state insurance departments is adequate and whether federal solvency regulation would be likely to reduce the overall cost of insolvencies. A 1990 report on several key insolvencies in the property-liability insurance industry during the mid-1980s by the House Energy and Commerce Subcommittee on Oversight and Investigations, chaired by Rep. John Dingell, argued that those insolvencies were caused by poor insurer management and fraud in conjunction with ineffective state regulation.

The Dingell report was followed in 1991 by the insolvency of six life insurers (owned by four different corporations) and the subsequent downgrading of financial ratings for a number of major life insurers by insurance rating agencies. In contrast to the property-liability insurer failures analyzed in the Dingell report, the major problem in those insolvencies was the quality of invested assets. Those insurers had been damaged by significant reductions in the value of their investments in commercial real estate (primarily mortgages), "junk" bonds, or both. Several of those insolvencies were preceded by large cash withdrawals by policyholders. Those insolvencies and associated policyholder "runs" received substantial publicity in the national media. They also provided considerable impetus to proposals for federal solvency regulation.

Most analysts believe that the life and health insurance industry, which holds one-third of all corporate bonds and about 30 percent of commercial mortgages, is fundamentally sound, although some large insurers with substantial holdings of commercial real estate have been weakened by the severe slump in commercial real estate markets. In addition, the National Association of Insurance Commissioners, state legislatures, and state insurance departments have made and are in the process of making substantive changes in solvency

Scott E. Harrington is a professor of insurance and finance at the College of Business Administration at the University of South Carolina.

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Table 1: Life and Health Insurance Company Impairments and Insolvencies, 1986–October 1991

Year	Number of Insurers	Total Book Value of Assets ($ millions)	Book Value of Assets for Largest Company ($ millions)	Median Book Value of Assets ($ millions)
1986	10	3,993	3,943*	11
1987	19	111	26	11
1988	10	102	46	6
1989	41	964	646	2
1990	26	773	349	6
1991	26	41,246	13,482	52

Note: Assets were not reported for a number of small companies. Median is for companies with reported assets only.
*Combined assets of National Investors Life and University Life (Baldwin United group).

regulation in response to insolvencies in both the property-liability and life and health insurance sectors. Developments in state regulation and experience with federal regulation of depository institutions work against federal intervention in insurance solvency regulation. Nonetheless, whether federal solvency regulation becomes a reality during the next year or two may well depend primarily on whether another "major" property-liability or life and health insurer becomes insolvent.

Increases in the frequency and severity of insurance company insolvencies have led to intense debate over whether solvency regulation by state insurance departments is adequate and whether federal solvency regulation would be likely to reduce the overall cost of insolvencies.

Life and Health Insurance Company Failures

Table 1 shows data on the number and average size of "impaired" or insolvent life and health insurers from 1986 through 1991. The data for 1986 reflect the failure of Baldwin United affiliates with combined assets of $3.9 billion, the largest life and health insurer failure by far until 1991. The total book value of assets of impaired and insolvent companies increased sharply in 1991 owing to the failure of six insurers that each had more than $4 billion in assets at year-end 1990 (see Table 2). Two of those insurers, Executive Life and Executive Life of New York, were owned by First Executive Corporation. Two others, First Capital Life and Fidelity Bankers Life, were subsidiaries of First Capital Holdings Corporation. With the exception of Mutual Benefit, each of those insurers had experienced reductions in assets, premiums, or both during 1990. Reductions in both assets and premiums were pronounced for the First Executive affiliates. Executive Life's premiums had been declining since 1986. The big surprise was the failure of Mutual Benefit, a mutual company that historically had enjoyed a conservative reputation.

Accurate estimates of the total shortfall of assets relative to liabilities for impaired and insolvent life and health insurers are not available. Assessments levied by life and health insurance guaranty funds against surviving insurers to finance unpaid claim costs increased from $140 million during 1985 to 1987 to $393 million during 1988 to 1990 (the last available data). Property-liability insurance guaranty fund assessments from 1985 to 1990 totalled about $3 billion.

To date, no assessments have been made for the insolvencies shown in Table 2. The California Insurance Department recently reached an agreement in which a large part of Executive Life business would be spun off to a French investor group that would contribute $3.55 billion toward the capitalization of a new insurer. It is estimated that this payment, along with guaranty fund assessments that could total almost $2 billion, will

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Table 2: Major Life and Health Insurer Insolvencies in 1991

Company	1990 Book Value of Assets ($ millions)	1990 Premiums ($ millions)	1990 Growth Rates (percent) Assets	Premiums
Mutual Benefit	13,482 (21)	3,201 (18)	16.2	13.3
Executive Life	10,167 (33)	354 (138)	−22.8	−44.5
Executive of NY	3,172 (90)	94 (311)	−18.7	−24.9
First Capital	4,458 (69)	511 (104)	− 6.0	−47.2
Fidelity Bankers	4,069 (77)	664 (87)	14.0	− 2.6
Monarch Life	4,478 (68)	267 (167)	−12.7	15.2
Industry	1,535,886	288,850	8.4	8.4

Note: Values in parentheses are industry rankings.

ensure that all contract holders with accounts up to $100,000 will be paid in full. Owing to a court decision, the settlement protects holders of investment contracts for which the guaranty fund statute seemed to exclude coverage. The New York Insurance Department arranged the sale of half of Executive Life of New York's business to Metropolitan Life. The remaining business will be administered by Metropolitan, but it will remain under regulatory control. At present, no assessments are expected for Executive Life of New York.

Several insurers, including Shearson Lehman Brothers Holdings, Inc. (owned by American Express), a 28 percent owner of First Capital Holdings that sold large amounts of First Capital Life business, have submitted bids to California regulators that would guarantee the policy values of First Capital Life. Virginia regulators are presently negotiating the sale of Fidelity Bankers Life, which is believed to be in better condition than its sister. New Jersey regulators sold off part of Mutual Benefit Life and are negotiating sales of other pieces. Massachusetts regulators arranged the sale of a large block of Monarch Life's business to Merrill Lynch. The magnitude of any shortfall of assets relative to liabilities and the need for significant assessments for Mutual Benefit and Monarch are uncertain.

While the details vary, the basic story is similar for those insurers. They generally wrote large amounts of investment-oriented contracts that promised fixed yields on principal for one or more years—annuities, guaranteed investment contracts, and interest-sensitive life insurance. Monarch wrote large amounts of variable life insurance that offered equity returns rather than fixed yields. To provide high yields on those products, the insurers pursued high-risk investment strategies. The units of First Executive and First Capital Holdings had substantial holdings of junk bonds (40 percent of assets or more). When the junk bond market plunged in the first half of 1990, so did the fortunes of those companies. Mutual Benefit and Monarch invested heavily in commercial real estate with limited geographic diversification; Monarch's parent also was heavily leveraged. Significant amounts of those investments later went sour. In the case of Mutual Benefit, over 20 percent of approximately $5 billion dollars of investments in real estate (mainly mortgages) were tied up in four projects that were classified as nonperforming at the time of the company's demise.

Impaired and insolvent insurance companies generally wrote large amounts of investment-oriented contracts that promised fixed yields on principal for one or more years. To provide high yields they pursued high-risk investment strategies.

As news of those insurers' financial difficulties spread, many policyholders surrendered their contracts. The run at Executive Life was prolonged: cash surrenders exceeded $3 billion in the year preceding its insolvency. Mutual Benefit experienced an estimated $1 billion in surrenders during the weeks preceding its board's request for intervention by New Jersey regulators. There also were reports of increased surrenders at Monarch and the units of First Capital Holdings before regulatory action.

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The genesis of those developments goes back to the early 1980s, if not the late 1970s. The sharp increase in inflation and short-term interest rates during that time made yields on savings in traditional whole life insurance contracts, which largely reflected slowly changing book yields on long-term investments, look meager at best. Competitive pressure for savings dollars led to the development and expansion of products with high current yields designed to attract individual savings and investment from pensions and other employment-related savings plans. Growth in group and single premium deferred annuities, guaranteed investment contracts, and universal life insurance produced large growth in assets (over 200 percent) for the industry during the 1980s. But competition based on investment yields influenced some insurers to pursue high-risk strategies. Investment in assets with limited liquidity and considerable potential volatility and sales of contracts that often had few restrictions or relatively small penalties for early cash outs by policyholders produced substantial risk for some insurers.

It is uncertain whether any of the large life and health insurers that failed in 1991 would have had assets sufficient to fund their obligations had they not been confronted with significant increases in cash surrenders.

The depth of the asset quality problem in the life and health insurance industry is difficult to assess. Overall holdings of high-yield bonds are low. Commercial real estate represents a greater problem for more insurers, and companies with large holdings of commercial real estate have received significant media attention. The value of a given insurer's real estate portfolio depends on many factors including the extent of diversification across different geographic regions. In addition, an insurer's vulnerability to cash withdrawals depends on the amount of its liquid assets and the extent of restrictions and penalties for early surrender of its contracts.

As noted, most analysts believe that the industry is fundamentally sound. A study of 129 large life insurers representing 83 percent of industry assets indicated that 81 percent of the insurers had liquid assets (short-term investments, cash, and the market value of publicly traded bonds) exceeding 50 percent of their demand liabilities (essentially net liabilities less nonsurrenderable reserves). Only 4 percent of the insurers had liquid assets less than 25 percent of demand liabilities. Since a significant proportion of demand liabilities includes surrender charges or other penalties for early withdrawal and many privately placed bonds held by insurers are relatively liquid, those data understate the true liquidity of many insurers. As of mid-February 1992, no major failure or run on a life insurer had occurred since the Mutual Benefit insolvency in July 1991—despite widespread publicity of failures and heightened concern with insurer safety and liquidity.

Implications of Policyholder Runs

The large cash withdrawals associated with major life and health insurer insolvencies raise a number of key policy questions: Did runs bring down otherwise solvent insurers? Were there significant adverse effects on other insurers and securities markets? Is a formal government mechanism needed to provide liquidity to insurers confronted with large cash withdrawals? Should the scope of government-mandated guarantees of insurer obligations be expanded?

It is uncertain whether any of the large life and health insurers that failed in 1991 would have had assets sufficient to fund their obligations had they not been confronted with significant increases in cash surrenders. It is clear, however, that none of those insurers could have been regarded as well-capitalized at the time withdrawals began. In principle, a run could actually *cause* the economic insolvency of an insurer that is forced to liquidate assets promptly in response to policyholder demands for cash. If the insurer were allowed more time to liquidate assets in an orderly manner, the market value of its assets might exceed the market value of its liabilities. If instead it must quickly sell assets such as commercial mortgages and privately traded bonds in thin markets, the realized values from asset sales could be significantly lower than values attainable with an orderly disposition. Another possible adverse consequence of runs is that they immediately deplete an insurer's franchise value, which reflects the present value of future cash flows that are expected from prior investments in sales.

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While a run could possibly force the liquidation of an otherwise solvent insurer, this possibility should be clearly distinguished from the impact of a run on an insurer that is already insolvent or virtually insolvent. If the market value of an insurer's assets, *given time to arrange for orderly sales,* is less than the market values of its liabilities, the insurer is economically insolvent. There is an important distinction between liquidity costs incurred by immediate sales of illiquid assets and reductions in underlying asset values apart from liquidity costs. The collapse of the junk bond market and large reductions in commercial real estate values significantly reduced asset values of failed life and health insurers independent of any short-term liquidity costs. As an example, First Executive's stock price plummeted during the first half of 1990 along with values in the junk bond market.

It is possible that one or more of those insurers would have been able to escape insolvency if large policy surrenders had not occurred. But their precarious financial positions primarily reflected reductions in the value of their invested assets rather than forced sales in response to demands for cash. Increased surrenders and pressure to liquidate assets were primarily the consequence rather than the cause of those insurers' problems.

Runs on financially weak insurers could negatively affect financially stronger insurers if large numbers of policyholders panicked and forced the immediate sale of relatively illiquid assets. That in turn could adversely affect asset markets and thus other parties who own similar assets. The magnitude of the life and health insurance industry's vulnerability to such problems obviously depends on liquidity and market values of assets and liabilities. The liquidity of the overall life and health insurance industry suggests that widespread problems of that sort are a remote possibility. Despite the events of 1991, the magnitude of the potential losses from severe runs in the life and health insurance industry would still appear to differ by an order of magnitude from those that could arise from widespread bank runs in a system of fractional reserve banking.

Use of the term *run* to describe large cash surrenders for troubled life and health insurers is not surprising, but its pejorative connotation may be inaccurate. Large cash withdrawals may involve surrender charges. They may require forced sale of assets at prices below levels that could be obtained in an orderly sale, and they possibly might be the last straw that leads to economic insolvency. In addition, liquidity costs from sales of assets to meet cash demands before any regulatory takeover will reduce the values available to remaining policyholders and other creditors. But cash withdrawals by policyholders who are concerned with safety and the possibility that such withdrawals can occur if an insurer becomes weak also can have beneficial effects.

The collapse of the junk bond market and large reductions in commercial real estate values significantly reduced asset values of failed life and health insurers independent of any short-term liquidity costs.

Cash withdrawals can constrain the ability of a financially weak insurer to take on excessive risk: they can limit the ability to "go-for-broke" or "gamble for resurrection." They also can expedite the removal of an economically insolvent insurer from the market—before it is able to run up a much larger deficit. Those functions of cash withdrawals may be important if accurate verification of an insurer's market value is difficult or if supervisory authorities are prone to delay intervention until the ultimate cost of insolvency has become much greater. In this regard, policyholders who pull out cash are analogous to creditors who initiate bankruptcy proceedings.

Liquidity costs from forced asset sales and reductions in franchise values from cash withdrawals also will likely be mitigated if cash withdrawals accelerate regulatory takeover and the presumed orderly disposition of claims for remaining policyholders and creditors. In fact, if a troubled insurer is confronted with cash withdrawals that would force economic insolvency, it may be able to constrain losses by asking regulators to take over the company. Just as managements of nonfinancial firms may seek reorganization and protection from creditors under federal bankruptcy law, insurer managements may have some incentive to request regulatory takeover to preserve the value of the enterprise.

The possibility of large withdrawals of liquid liabilities if net worth declines also will affect an insurer's decisionmaking before problems arise. Methods for reducing the risk of costly runs

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include holding more capital and investing more funds in less risky and more liquid assets, improving asset diversification, and limiting the ability of policyholders to withdraw their funds by employing contractual charges, market-adjustment provisions, and, where permissible, prohibitions on early surrenders. That some insurers were imprudent, at least based on hindsight, does not mean that the possibility of large withdrawals of liquid liabilities had little or no effect on the capital, investment, and contract design decisions of many or even most insurers in recent years. In addition, the 1991 insolvencies and consumers' heightened concern for safety will likely encourage better risk management in the years ahead. Evidence indicates that a number of major insurers already are taking steps to reduce risk.

The case for establishing a governmental mechanism to supply liquidity to financially sound insurers with temporary liquidity problems is not compelling at this time.

Does recent experience suggest the need for a governmental mechanism to supply liquidity to financially sound insurers with temporary liquidity problems? Given what is known about the effects of cash withdrawals in recent insolvencies, the case for establishing such a mechanism is not compelling at this time. Administrative issues aside, the possibility that a liquidity mechanism would encourage risk-taking and lead to fewer liquid investments and more liquid liabilities suggests caution. The failure of the life and health insurance industry to push for a formal liquidity mechanism is probably informative in this regard, although it also could reflect other factors, such as an aversion to increased regulatory control that might follow the creation of a liquidity mechanism.

As it stands, the possibility of large cash withdrawals in response to adverse news about an insurer's financial strength places regulators in a delicate situation. Increased likelihood of regulatory action will probably precipitate or accelerate a run. Even policyholders whose balances are fully protected by guaranty funds may seek their cash to avoid delays in payment following regulatory takeover. Premature statements or actions by regulators might make a company's deteriorating financial condition worse. On the other hand, regulators might fail to take appropriate action because of fear of causing a run. Questions concerning what constitutes efficient closure policy and whether regulators should withhold information concerning an insurer's financial condition are difficult to answer.

Government Guarantees and Moral Hazard

The prevention of runs against depository institutions has been a pillar of bank and thrift regulation for decades. The overriding goal has been to make the system immune from runs. Federal deposit insurance, both explicit and implicit, for example, "too big too fail," has been preeminent in achieving that goal. Depositors do not run when they are assured prompt and full payment regardless of an institution's financial condition.

Property-liability insurance guaranty funds exist in all states and the District of Columbia to protect residents from the consequences of insurer failure. Claims generally are covered up to a maximum of $300,000 (with unlimited coverage for workers' compensation). Life and health insurance guaranty funds exist in all states; the last four states (including New Jersey) established such funds in 1991. Most of those funds cover residents only. There is no life and health insurance guaranty fund in the District of Columbia. Coverage is generally limited to a maximum of $300,000 for individual claimants with no more than $100,000 for cash values of life insurance and annuity contracts. About twenty states provide from $1 million to $5 million in coverage for guaranteed investment contracts or group annuity contracts that do not allocate funds to individual employees. Other guaranty fund statutes either specifically exclude or do not address those types of contracts.

Guaranty fund payments to policyholders of insolvent insurers are financed by assessments against surviving insurers. Limits on maximum annual assessments usually equal 1 percent or, much more commonly, 2 percent of premiums. The estimated nationwide assessment capacity of the life and health guaranty funds is about $3 billion. Many states allow both property-liability and life and health insurers to offset assessments against state premium tax obligations in equal installments over a period of five or more years. A

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few states require surcharges against policyholders. Others allow changes in premiums and policy dividends, but those actions will likely be constrained by competitive pressure.

Insolvencies in the life and health insurance industry have led to renewed calls by some parties for the creation of a federal, prefunded guaranty program with expanded coverage. Media coverage and some analyses of major life and health insurer failures have often emphasized coverage limits and omissions and lack of uniformity in state guaranty plans. Less than complete coverage protection and lack of uniformity typically are presumed to be inherently bad.

State guaranty funds also have frequently been criticized for having insufficient capacity to respond to a major failure. Those criticisms often have raised the spectre of a taxpayer bailout in the event of a major insolvency unless advance premiums are implemented to build up a fund to cover potential costs. But advance premiums for savings and loan deposit insurance did not insulate taxpayers from financing a massive bailout. Instead, the insolvency of the savings and loan insurance fund and the repeated failure of Congress to provide or require more funding greatly increased the magnitude of the insolvency problem by allowing and encouraging gambling for resurrection by insolvent institutions. While supervision of depository institutions has lately been enhanced, some analysts are skeptical of whether incentives for timely closure of troubled depository institutions have changed in any fundamental way.

To be sure, proponents of a federal, prefunded guaranty program for insurance often argue that the premiums should be risk-based (in contrast to deposit insurance) to help control default risk. But it is not clear that risk-based premiums are practical or politically feasible. Current state plans generally provide some financial incentive for financially strong insurers or state treasuries to pressure regulators for effective solvency regulation. Those incentives could be weaker if insurers had to pay fixed charges independent of insolvency experience.

Expansion of guaranty fund coverage, including steps to eliminate potential delays in receiving funds, would reduce or eliminate the likelihood of policyholder runs against troubled insurers. Since it is not obvious that the costs of potential runs exceed their possible benefits in discouraging risky behavior by insurers or in forcing closure of weak insurers, such a rationale for expanding coverage is tenuous at this time. In fact, the major disadvantage of a significant expansion in the scope of government guarantees is that it would further reduce or eliminate incentives for buyers and agents to deal with safe insurers and for insurers to be safe. The eventual increase in the frequency and severity of insolvencies could be very costly, and it could significantly increase pressure for strait-jacket regulation. At least in the case of property-liability insurance, a strong argument can be made for eliminating guaranty fund protection for large commercial insurance buyers (with suitable safeguards for third-party claimants) to encourage them to monitor insurers' financial strength. In the case of investment-oriented contracts sold by life and health insurers, it is not at all obvious that current government guarantees of "deposits" that are invested in fixed-income obligations with significant risk to principal are excessively weak.

The major disadvantage of a significant expansion in the scope of government guarantees is that it would further reduce or eliminate incentives for buyers and agents to deal with safe insurers and for insurers to be safe.

State Responses and Pressure for Federal Regulation

State legislators and the National Association of Insurance Commissioners have responded to the increased frequency and severity of insurer failures—and to the Dingell report—by enacting programs designed to beef up state solvency regulation. The changes have been substantive. Major developments include the association's establishing an accreditation program in 1990 for states that meet minimum legislative, administrative, and funding standards for solvency regulation. The association has adopted a number of new model bills as part of the minimum standards program. By year-end 1991 the association had accredited nine states. In 1991 forty-two states adopted legislative packages that were designed to enhance solvency regulation and help qualify

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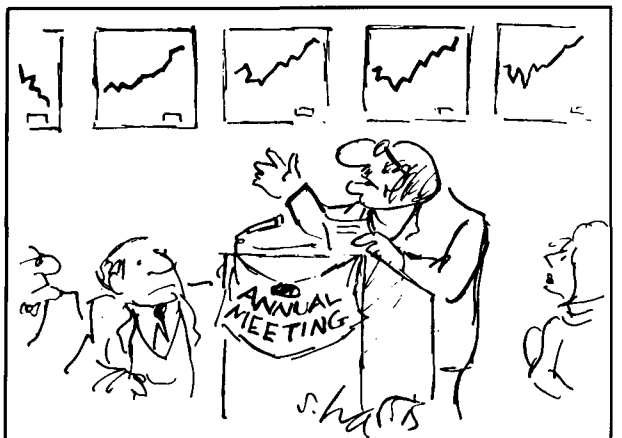

"All right, profits are down, but look at all the things that are up."

for accreditation. Legislative packages were introduced in five other states. By 1994 regulators in accredited states will not accept the audit reports of domestic insurers in unaccredited states, and they are considering imposing more severe sanctions. Those developments have undermined arguments that federal legislation is required to implement a program of minimum standards.

A primary objective of solvency regulation is the timely removal of economically insolvent insurers from the market. In practice, it is often difficult to determine when an insurer becomes economically insolvent.

The National Association of Insurance Commissioners has taken some action in relation to all of the major criticisms in the Dingell report. Examples include adopting model bills that contain tougher standards for reducing liabilities in conjunction with the purchase of reinsurance and stricter supervision of managing general agents, significantly increasing the amount of information that insurers must report about loss reserves and reinsurance, and requiring annual statements to be accompanied by an opinion from an independent public accountant. The association is also seeking federal authority that would increase its ability to oversee foreign reinsurers. It has adopted a model bill and ten states have enacted legislation that will limit an insurer's holdings of noninvestment-grade securities. In addition, the annual statement for life and health insurers is currently being modified to include new contingency reserves for interest rate risk and for investments in commercial real estate. Finally, the association is rapidly developing risk-based capital standards for both property-liability and life and health insurers.

Proponents of federal regulation have viewed the National Association of Insurance Commissioner's accreditation program as inadequate because the association lacks authority to require prompt compliance with an effective minimum standards program in all states. Sen. Howard Metzenbaum has introduced a bill that would create an independent federal agency to establish uniform standards for insurance solvency regulation and would create a federal guaranty system to supersede the state system. Perhaps more important, Rep. Dingell will likely introduce a proposal for some form of federal involvement in solvency regulation in the near future. Possibilities that have been discussed by House staffers include minimum federal standards or, more recently, optional federal certification with direct federal regulation of insurer solvency.

A primary objective of solvency regulation is the timely removal of economically insolvent insurers from the market. That function is especially important when market forces are insufficient to ensure that weak companies are removed before they can gamble for resurrection and run up large deficits. In practice, it is often difficult to determine when an insurer becomes economically insolvent. For property-liability insurers, a major problem that confronts regulators and other outsiders (and, to a lesser extent, insurer managers) is the valuation of insurers' liabilities. By the time an insurer actually has difficulty paying its claims, it may have accumulated large unfunded liabilities. Similarly, it often is difficult to value the net worth of a life and health insurer because the value of certain types of assets may be especially difficult for outsiders to monitor. Regulators also may find it difficult to convince a court that an insurer is insolvent when it is growing and still has significant cash flow. Such problems will likely allow some insurers to operate for a time after they have become insolvent, even if most regulators strive to close insolvent insurers promptly.

One of the most serious criticisms of state regulation is that solvency regulators often delay clo-

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sure far too long—either through failure to detect probable insolvency or reluctance to shut down insolvent insurers. Skeptical observers might question whether regulators have commonly delayed closure of insurers that clearly were economically insolvent. The evidence used to support that criticism does not really justify a firm conclusion, and major insurance rating agencies have maintained high ratings on some insurers until shortly before insolvency. Nonetheless, the evidence that is available and possible incentives for regulators to delay closure are a cause for concern, especially in view of the disastrous consequences of deliberate forbearance by federal regulators in the case of insolvent savings and loans.

Insurance regulators in a given state are viewed as having primary responsibility for regulating domiciliary companies. Regulators in other states commonly are presumed to defer to the judgment of regulators in the state of domicile to help coordinate monitoring and reduce costly duplication. A possible disadvantage of that system is that the benefits of surveillance by regulators in the domiciliary state will be spread broadly among all states in which the insurer sells coverage, but the costs will be borne by the state of domicile. If this leads to too little monitoring by some domiciliary regulators, regulators in other states will have more incentive to monitor nondomiciliary insurers. That response in turn might create an incentive for some regulators to free-ride on the monitoring efforts of other states. Such problems suggest that minimum standards for state solvency regulation and cross monitoring by state solvency regulators could be advantageous. Viewed in this light, the National Association of Insurance Commissioner's accreditation program could be a rational response to potential incentive problems in a decentralized system of state regulation.

Other things being equal, these incentive issues suggest that direct federal solvency regulation or supervision of state solvency regulation could be advantageous because it might reduce the need for costly cross monitoring. Other things are not necessarily equal, however. Given political pressures that affect Congress and that thus would affect federal insurance regulators, one cannot conclude that a federal system would lead to more efficient regulation. Federal regulation of savings and loans did not contain sufficient incentives for prompt closure of insolvent firms. The consequences for taxpayers are well known.

Related Issues: Rate Regulation and Antitrust

While state regulators have been busy beefing up solvency regulation and trying to keep would-be federal regulators at bay, state regulation of automobile and workers' compensation insurance rates in many states has been undermining traditional industry opposition to federal regulation. Consumer pressure on regulators to hold down rate increases in states with rapid real growth in claim costs has produced significant problems for many insurers and created pressure for exit from affected lines of business. Some states have deterred exit by erecting exit barriers that require an insurer to exit all lines of business to exit auto or workers' compensation insurance. Those rules make exit more costly by requiring an insurer to write off its entire investment in a state.

Failing to allow insurance rates to keep pace with growth in costs obviously is not consistent with enhancing the safety and soundness of property-liability insurers. Other things being equal, local companies will experience the greatest deterioration in financial condition, but multistate insurers also will be adversely affected, and their incentive to commit capital to support overall sales will decline. Thus, failure of regulators to allow adequate rates in a given state will likely have some external effects and thus will undermine the economic and philosophical case for state regulation.

Minimum standards for state solvency regulation and cross monitoring by state solvency regulators could be advantageous. Given political pressures, one cannot conclude that a federal system would lead to more efficient regulation.

A system of federal solvency regulation and state control over insurance prices would not likely be stable, given political pressure in many states to deny cost-justified rate increases. Federal solvency regulation would likely be followed or even accompanied by preemption of state rate regulation for federally regulated insurers. The possibility of ultimately escaping state rate regulation makes direct federal regulation appear attractive to some insurers.

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The American Insurance Association, a trade group representing large property-liability insurers that primarily write commercial lines, has distributed a discussion proposal for optional federal licensing and solvency regulation, along with preemption of state rate regulation. Preemption is probably more feasible for commercial lines of insurance than for personal lines. Some commercial property-liability insurers also might hope that federal solvency regulation would help them achieve other legislative goals that are related to solvency, such as revisions in Superfund legislation.

The competitive structure of the industry, substantial heterogeneity among insurers and buyers, flexibility in pricing, and evidence on profitability suggest that the McCarran-Ferguson Act's antitrust exemption is not anticompetitive.

The House Judiciary Committee, chaired by Rep. Jack Brooks, reported out a bill last year that would modify the McCarran-Ferguson Act of 1945 to virtually repeal the insurance industry's antitrust exemption. The McCarran-Ferguson Act explicitly endorses the primacy of state regulation and provides an exemption from federal antitrust law for activities that are subject to state oversight and that do not involve boycott, coercion, and intimidation. Cooperative activities that have developed under that exemption include the development of policy forms and the estimation and dissemination of "prospective loss costs" and "advisory rates" by property-liability insurance advisory organizations; advisory rates are now being phased out. Some type of cooperative development of policy forms would probably survive antitrust scrutiny if the Brooks bill were eventually to become law; forecasting of future claim costs by advisory organizations would not—except possibly for very small insurers.

Forecasting activities by advisory organizations reduce both the cost of information to insurers and the fixed costs of ratemaking and thus facilitate entry into markets. If the information provided by advisory organizations has significant value, its availability at low cost is likely to increase its use and thus reduce insurers' forecast risk and the need for capital. If so, raising the cost of that information by prohibiting cooperative activity could produce some combination of increased insolvency risk and higher prices. The argument against cooperative forecasting activities is that they make collusion more likely. Nevertheless, the competitive structure of the industry, substantial heterogeneity among insurers and buyers, flexibility in pricing, and evidence on profitability suggest that the antitrust exemption is not anticompetitive.

The outlook for changes in the McCarran-Ferguson Act is uncertain. There is significant division among insurers and trade groups on the subject, with some groups (such as larger, commercial line property-liability insurers) willing to compromise and accept some change in the law. There also is some support for repealing the exemption in exchange for a preemption of state rate regulation. Any significant change in the McCarran-Ferguson Act would likely erode the primacy of state regulation.

Conclusions

Problems of asset quality will linger for many life and health insurers unless commercial real estate values increase significantly. Property-liability insurers are confronted with significant risk of unexpected increases in liabilities, especially from environmental liability claims and natural disasters. Insurance will remain a risky business. A system in which insurers never became insolvent would be inordinately costly.

State responses to the increased frequency and severity of insurer insolvencies—and to the threat of federal intervention—have been meaningful. A prudent approach for Congress at this time would be to eschew federal solvency regulation and allow continued improvements in state regulation. The key policy goals of state solvency regulation should be to achieve an appropriate balance between market and regulatory monitoring and to provide resources and incentives for regulators to engage in efficient monitoring and closure.

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The McCarran-Ferguson Act

Anticompetitive or Procompetitive?

Patricia M. Danzon

The McCarran-Ferguson Act provides a limited exemption to the insurance industry from the federal antitrust laws. The act provides that the Sherman Act, the Clayton Act, and the Federal Trade Commission Act apply to the business of insurance "to the extent that such business is not regulated by state law." That limited exemption from federal antitrust law does not extend to "any agreement to boycott, coerce or intimidate, or act of boycott, coercion, or intimidation." The act also declares that the business of insurance shall be subject to regulation and taxation by the states. After passage of the act in 1945, all states enacted some form of rate regulation to qualify for the exemption. The practical import of the antitrust exemption has been eroded in recent years as courts have narrowed the definition of the business of insurance and broadened the definition of boycott and as an increasing number of states have subjected the industry to state antitrust law.

Proposals to repeal the McCarran-Ferguson Act have been a familiar feature of the Washington scene for many years. But pressure has mounted recently, precipitated by the so-called liability insurance "crisis" of the mid-1980s, and repeal or fundamental change have now become a real possibility. The liability insurance crisis was characterized by very sharp increases in insurance rates for commercial general liability, which covers product liability and other tort liabilities faced by corporations, municipalities, not-for-profit, and other corporate entities. Between 1984 and 1986 premium volume for general liability grew by over 70 percent per year, and some classes of insureds faced rate increases of several hundred percent, while lack of availability was reported for other coverages, notably for pollution and very high limits of "excess" coverage. Attempts by the industry to change certain provisions of the standard insurance contract precipitated the filing of a suit by nineteen state attorneys general, alleging boycott by the major insurers, international reinsurers, and the Insurance Services Office. At the same time the rising cost of automobile insurance, particularly in a few states such as California and New Jersey, has made the cost of liability insurance an inflammatory consumer issue.

Proponents of repeal contend that the McCarran-Ferguson Act has permitted insurers to collusively set prices above competitive levels.

Patricia M. Danzon is a professor of health care systems and insurance at the Wharton School of the University of Pennsylvania.

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Although insurance commissioners in every state retain the right to review rates, those rights are not actively exercised in states that have adopted competitive rating or "use and file" laws. The allegation is that state regulation has lacked real teeth and has been no substitute for antitrust enforcement.

Collusion has allegedly been facilitated by the operation of rate service organizations, in particular, the Insurance Services Office, which has for many years been the leading rating bureau for property-liability insurance lines other than workers' compensation. The primary function of the Insurance Services Office has been to pool loss data from contributing insurers, analyze trends, and project expected losses for each line of insurance and rating territory for a standard type of policy with specified limits of coverage. Until 1990 the Insurance Services Office also added an expense factor, published advisory rates, and filed and obtained regulatory approval for those rates in every state where Insurance Services Office filings were permitted. Affiliated firms that subscribed to Insurance Services Office rating services could then in many states meet regulatory requirements either by simply filing a plan to use Insurance Services Office rates or deviations from or modifications to those base rates, or could refer to the Insurance Services Office filing to support their own rate and forms filing. In 1990 the Insurance Services Office ceased publishing advisory rates. It now publishes loss costs only and leaves to each insurer the task of adding a mark-up for expenses and return on capital to arrive at a final rate.

Pressure to repeal the McCarran-Ferguson Act has not abated, however. In November 1991 the House Judiciary Committee passed the so-called Insurance Competitive Pricing Act (H.R. 9), usually referred to as the Brooks bill after its sponsor, House Judiciary Committee Chairman Jack Brooks. The full House is scheduled to consider that bill this year. The Brooks bill would prohibit insurers from "price-fixing," a term the bill leaves undefined, would forbid the allocation of regions or customers among competitors, would forbid monopolization of any part of the insurance industry, and would prohibit the tying of the sale of insurance to the sale of any unrelated product.

Proponents of repeal of the McCarran-Ferguson Act are basing their case on the unproven assertion that with the current exemption, the insurance industry can and does collude to fix prices. Commenting on the likelihood of the Brooks bill's being enacted in 1992, Bob Hunter, president of the National Insurance Consumer Organization, predicted, "I think the House will take it up and it will pass. . . . Who's going to vote for price-fixing?"

The issue has thus been very cleverly cast as if a vote against repeal of the act is a vote for price-fixing. The presumption is thereby created that collusive pricing by the insurance industry contributes significantly to the cost of liability insurance. But the assertion of price-fixing is unproven. Indeed, the consensus of several careful analyses of the evidence is that the overwhelming cause of the rising cost of liability insurance is the rising cost of the underlying tort system, including the number of claims, the size of awards, and the costs of litigation. Unanticipated and retroactively applied increases in insurer liabilities eroded the capital of the insurance industry in the first half of the 1980s, which contributed to the sharp premium increases in 1985 and 1986. Declining interest rates were another contributing factor. In the late 1980s the growth of claim costs abated in general liability and medical malpractice, and insurance rates have fallen. In general, the price of insurance must rise to reflect the expected cost of the losses against which policyholders are insured. The allegation of price-fixing is a clever means of deflecting attention from the underlying problems of the civil justice system that are at the heart of rising costs of liability insurance. Repeal of the McCarran-Ferguson Act also promises to open the way to a new, vast, profitable area of litigation.

Proponents of repeal of the McCarran-Ferguson Act are basing their case on the unproven assertion that with the current exemption, the insurance industry can and does collude to fix prices.

The case for repeal might seem to draw support from simple economic theory. The argument is that the purpose of antitrust law is to protect consumers from anticompetitive practices and that evidence from other industries shows that substituting regulation for competition tends to reduce rather than enhance efficiency, which often results in prices above competitive levels and wasteful service

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competition. There seems little justification for extending special treatment to the insurance industry. That reasoning, which repeal proponents fully exploit, draws credibility from the early experience under the McCarran-Ferguson Act. Following its enactment in 1945, all states moved to impose some form of insurance regulation, which thus extended to the industry the antitrust exemption. During the early years under the act, rating bureaus probably were effective cartelizing agencies, using rate regulation to enforce adherence to bureau rates.

Repeal would likely reduce competition, increase the cost of insurance, and reduce the availability for some high-risk coverages as the threat of antitrust litigation would reduce participation in efficiency-enhancing cooperative activities.

By the 1970s, however, the natural competitive forces within the industry became stronger with the development of the direct writers and the adoption in many states of competitive rating laws. The Insurance Services Office moved to selling its services on a piecemeal basis that gave insurers the freedom to purchase as many or as few services as they wished. For example, insurers could purchase actuarial information without buying rate filing services. The enactment of the Risk Retention Act in 1981, with amendments in 1986, has enabled commercial policyholders to turn to quasi self-insurance alternatives to commercial insurance. That has further undermined any potential monopoly power of the insurance industry. A significant and growing fraction of general liability insurance is now written through captives, risk retention groups, or other self-insurance options. For medical malpractice, physician-owned mutuals now write over half the market for physicians; for hospitals, self-insurance through captives is an even larger factor. The evidence, developed in more detail below, is that insurance is now a highly competitive industry, despite the McCarran-Ferguson Act. Repeal of the act is thus not necessary to assure competition in insurance markets.

Are Collective Activities Anticompetitive or Procompetitive?

In fact, it is highly likely that repeal would actually reduce competition, increase the cost of insurance, and reduce the availability for some high-risk coverages, because the threat of antitrust litigation would make insurers unwilling to engage in efficiency-enhancing cooperative activities.

Insurers are in the business of assuming risk. Collective activities that increase information or spread risk among insurers tend to reduce the price of insurance. Collective action is most important for loss forecasting and pricing accuracy. The fair or competitive price of an insurance policy is equal to the present value of expected losses (including claim adjustment or litigation expense), discounted to reflect expected investment income and adjusted for taxes and a normal return on capital. Forecasting expected losses on a pool of policies is relatively simple for stable lines of insurance such as life insurance, where losses across policyholders are uncorrelated and trends over time are stable. For any pool of risks, the predictive accuracy achieved with a given number of policies is lower, the larger the variance of the underlying loss distribution, the higher the correlation between losses for individual policyholders in the pool, and the less certain the estimates of the parameters of the underlying loss distribution.

All of the factors that tend to undermine predictive accuracy for insurers apply more to liability insurance lines than to life insurance and are most severe for general liability, because general liability losses are highly dependent on the trends in tort law. The fact that both the frequency of claims and the size of awards against policyholders are influenced by trends in tort law induces a positive correlation of outcomes for individual risks in the pool. Differences in judicial rulings across jurisdictions and changes over time mean that the parameters of the underlying loss distribution cannot be estimated with precision.

Unpredictability is greater, the longer the duration of the liability. The so-called long tail of liability is more extreme for general liability than for other lines because in most states the statute of limitations for product liability does not begin to run until the discovery of the injury giving rise to the complaint, which may be many years after the insurance policy was written. The average lag between pricing the policy and paying out on

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claims is around five years for general liability and may be as long as twenty years or more for coverage of long-lived capital equipment and products that may be linked to cancers with very long gestation periods.

In addition to the uncertainty created by a long exposure period during which rules of tort law may undergo dramatic change, general liability is characterized by a huge range in possible losses for any policyholder. Although most policyholders will have no claims in a particular policy year, there is a small chance of a multimillion dollar loss in the event of a severe personal injury with a large pain and suffering award, multiplied manyfold if there are multiple claims from the same product line. Interstate differences in tort regimes and the potential for forum-shopping by plaintiffs exacerbate the uncertainty.

Those characteristics of the underlying loss distribution—high variance, high correlation, and imprecise parameter estimates because of dependence on tort regimes that differ across states and over time—mean that the experience of any single insurer typically gives a very imprecise estimate of expected losses for a given class of insureds in a single state. Precision in loss forecasts can be increased by pooling the loss data of multiple insurers, provided that the losses reflect similar policy provisions. Because the losses for a particular policy year are paid out over many years, the accuracy of loss forecasts requires tracking and analyzing payout patterns (loss development) and trends over time in the underlying loss distribution. Thus, as long as the underlying tort system remains unpredictable, loss forecasts for liability insurance will remain imprecise and there will be gains from using common policy forms and pooling loss experience, including estimation of loss development and trends over a period of years.

Improving precision of loss forecasts is not simply of concern to owners of insurance equity. Insurer risks that are not readily diversifiable must in the long run be reflected in higher prices or reduced coverage availability for policyholders. In the short run shocks to insurer capital that result when realized losses greatly exceed anticipated losses, as occurred in the mid-1980s, lead to shocks in the price and availability of coverage. Imprecision in insurer loss forecasts also contributes to the rate of insurer insolvencies, the costs of which are ultimately borne by policyholders, unsatisfied claimants, or solvent insurers that are assessed to cover payouts through state guaranty funds.

Those functions—of standardizing policy forms, pooling and analyzing data, and estimating loss development and trends—have traditionally been performed by rate service organizations. Obviously, the information gains from data pooling are greatest for small insurers. But even the largest insurers benefit from data pooling in unpredictable lines, particularly in states and lines where their own experience is relatively thin. In commercial lines there are advantages for large buyers with nationwide operations in obtaining coverage for all their exposures in all states from a single insurer. By using Insurance Services Office rates or loss costs as a benchmark, insurers can satisfy those demands at reasonable risk even in states or lines where they do not have a large market share. In addition, use of Insurance Services Office rate-filing services greatly reduces the costs of meeting state regulatory requirements. Because compliance with regulatory requirements is essentially a fixed cost, independent of the volume of business that is written in the state, those costs might deter the entry of small-volume insurers, if they could not spread the costs through the Insurance Services Office rate-filing process.

As long as the underlying tort system remains unpredictable, loss forecasts for liability insurance will remain imprecise. There will be gains from using common policy forms and pooling loss experience.

Another form of cooperative activity that insurers engage in is pooling risk through underwriting pools, which parcel out the risk for very large and uncertain losses among insurers. Here the function of pooling is simply to limit the exposure of any single insurer and thus to make available coverage that no single insurer would be willing to assume alone.

The Policy Options

Even proponents of McCarran-Ferguson repeal generally recognize efficiency gains from some of those cooperative activities of insurers. Pooling of

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historic loss data is generally accepted in principle; but some would not permit pooling of data on losses incurred but not reported, or collective trending. For example, a proposed amendment to the Brooks bill would have permitted joint trending only for very small insurers. But such a solution is unworkable even for small insurers because they cannot be sure in advance that individually and collectively their market share is small enough to qualify for the exemption. Moreover, that solution does not address the problem of large insurers with small volume in particular markets.

Some cooperation on the design of policy forms is generally considered acceptable because it facilitates price comparisons for consumers. Perhaps more important but less widely acknowledged, use of common forms is essential for meaningful pooling of data. Some risk sharing through risk pools is also generally acknowledged to increase the availability of coverage. That, however, could clearly be threatened under the Brooks bill, if interpreted as "allocating customers among competitors" or "monopolizing or attempting to monopolize part of the insurance business."

If collective activities are protected by increased state rate regulation, proponents of competitive insurance markets would have won the battle but lost the war.

Proponents of repeal argue that those joint activities would be protected under general antitrust protections, reinforced by the state action doctrine. The state action doctrine preempts federal antitrust surveillance of activities that are regulated by the individual states. There is considerable uncertainty as to just how detailed the state regulation must be to qualify for the exemption. Thus, one likely outcome of repeal is that at least some states would adopt more stringent regulation of rates. But the experience with state regulation is that it has generally been harmful to competition, with alternating periods of excessive and inadequate rates and, increasingly, pressure to effect cross subsidies across groups of consumers. Thus, if collective activities are protected by increased state rate regulation, proponents of competitive insurance markets would have won the battle but lost the war.

A third alternative that some large insurers support is modifing McCarran, replacing the blanket exemption with a much more limited exemption for a specified list of cooperative activities, including joint data collection, joint analysis, and reporting of historical data, loss development, and trending. Insurers would be allowed to develop collective data on the likelihood of fire loss through information gathered from building inspections. In addition, they could develop and use standardized policy forms and could make joint underwriting and pooling arrangements. Despite months of negotiations between industry representatives and Rep. Brook's staff, those protections were not included in the bill that the Judiciary Committee ultimately approved.

Thus, Congress now has three options. The first is a bill, such as the Brooks bill, that proscribes a list of activities that are presumptively anticompetitive, with the proscribed activities undefined and with only an implicit presumption that procompetitive collective activities would be unaffected. Under that option some increase in state rate regulation is likely and indeed might be encouraged by the bill. The second option is a modification that would explicitly create safe harbors for a limited list of collective activities. The third is no change.

In Defense of the Status Quo

The main argument for no change is that repeal of the McCarran-Ferguson Act is neither necessary nor sufficient to assure competition in the insurance industry. The assertion that the McCarran protection permits insurers to collude effectively and set prices above the competitive level has not been substantiated and is implausible on its face because it ignores the highly competitive structure of the industry. Since the Insurance Services Office moved to selling services on a piecemeal basis, with no requirement that subscribers use the advisory rates, both theory and evidence indicate that the availability of those services has increased the number of firms in the market and has increased rather than reduced competition. The most serious impediment to competitive pricing has been state rate regulation, which is likely to increase rather than decrease in importance if the act is repealed.

The compromise alternative of repeal with safe harbor protections could in theory preserve the gains from efficiency-enhancing collective activities. But in practice the risk of costly litigation

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over what activities are and are not protected may significantly reduce the willingness of insurers to engage in such activities. That is particularly true if the Brooks bill is interpreted to make certain activities per se illegal and to eliminate the traditional rule-of-reason analysis that applies in other industries. Faced with the threat of antitrust litigation that could apply to thousands of policies if a single rate is challenged for policyholders, large insurers are likely to be less willing to contribute data, and the accuracy of any loss pooling is likely to suffer. That in turn will increase forecast errors, reduce the number of small insurers in the market, and reduce the willingness of large insurers to write classes of business for which they have little experience. Thus, the cost of insurance will rise and the availability of insurance will decrease.

Of course, if an Insurance Services Office benchmark loss forecast is not available, some insurers that are too small to develop credible rates based on their own experience may continue to operate simply by pegging their own rates to those charged by large insurers. Such parallel action allegedly already exists and is hardly surprising. Large insurers cannot avoid partially revealing their loss forecasts by the prices that they charge. But the pricing strategies of competitors can only be used to infer their private information under a fairly strong set of assumptions that are unlikely to apply generally in liability insurance markets. Thus, even if some small firms survive by such parallel action, that outcome hardly achieves the increase in competition forecast by proponents of repeal. Moreover, the real information available to both price setters and imitators is reduced if the pooling activities of the Insurance Services Office are reduced or eliminated. Some increase in risk and in forecast errors is therefore to be expected.

The Evidence on Competition under McCarran-Ferguson

To measure the extent of competition, the natural starting point is the "structure-conduct-performance" paradigm of industrial organization economics. By any reasonable measure of market concentration, such as the ease of entry and exit, the insurance industry is structurally competitive, except in those heavily regulated states that impede withdrawal by insurers. There is no "right" measure of the market. Although state licensure requirements may act as a temporary barrier to entry, because the delay is at most temporary, there is a strong case for viewing liability insurance as a national market, at least within broad related lines of insurance such as private individual lines and commercial lines. Even at the state and line level, most lines pass normal structural tests based on concentration ratios or Herfindahl indexes. Concentration may appear high at any point in time in a few commercial lines such as medical malpractice. But low costs of entry and exit make those markets highly contestable. Moreover, for commercial lines the availability of self-insurance options through risk-retention groups, captives, and mutuals severely constrains the potential for noncompetitive pricing by insurers.

By any reasonable measure of market concentration, such as the ease of entry or exit, the insurance industry is structurally competitive, except in those heavily regulated states that impede withdrawal by insurers.

A second potential indicator of competition is price dispersion. Unfortunately, relevant price data for liability insurance are not routinely available. It is extremely costly to collect information on rates filed by insurers in most states. Moreover, even if the task were undertaken, it would seriously understate the true degree of price competition because filed rates are not transactions prices. In the days when the Insurance Services Office filed rates, insurers often filed rate deviation and rate modification plans that gave them the discretion of deviating from the filed rates within certain limits. Thus, actual prices charged to any consumer might be quite different from the filed rate on the basis of the underwriter's judgment about the individual risk. The limited evidence available from occasional surveys strongly refutes the charge that all or most firms adhere to the Insurance Services Office rate, although it does act as a benchmark in the market. Moreover, the pattern of deviations is inconsistent with the cartel hypothesis.

Measures of insurers' profitability are even more problematic and, even if available, would be inconclusive. Many insurers are not publicly traded, and those that are tend to be multiline,

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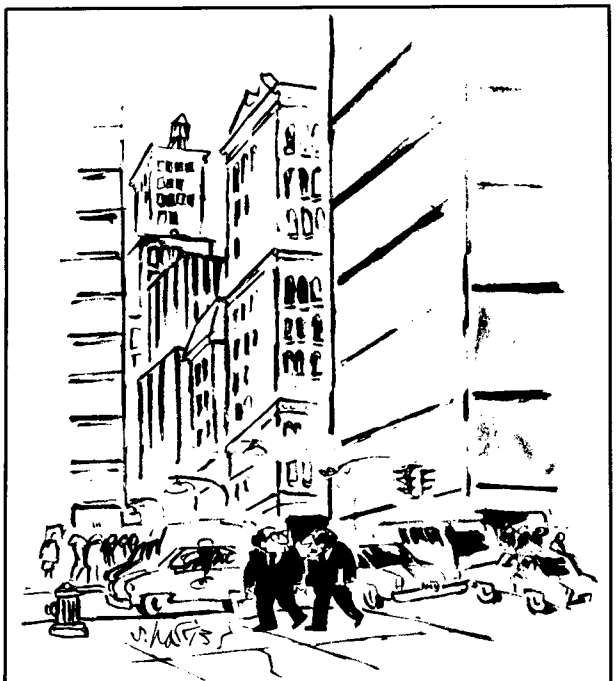

"Kickbacks, embezzlement, price-fixing, bribery . . . this is an extremely high-crime area."

multistate firms, some affiliated with holding companies with activities not related to insurance. Most studies that have attempted to measure profitability conclude that insurers have not earned rates of return above the competitive level. That does not dispose of the charge of noncompetitive pricing, however, because competition on nonprice dimensions of the product could eliminate any potential excess profits that might have been earned had prices been set above competitive levels.

With the present competitive structure of the industry collective activities can continue to survive only to the extent that they reduce costs for subscribing firms.

Thus, the structural evidence on the number of actual and potential competitors and on patterns of entry and exit together with the evidence on price dispersion remains the main basis for concluding that the industry is competitive.

The Role of Rate Service Organizations

Unconcentrated structure would be a misleading indicator of competition if the industry were able to use rate service organizations to set and maintain prices above the competitive level under the umbrella of the McCarran-Ferguson Act. Given the large number of actual and potential competitors, however, any attempt to maintain supracompetitive rates would be futile without any mechanism to enforce adherence and with the cost of filing deviations from bureau rates dropped to a minimal level. In addition to the large number of firms, the ease of entry, and the lack of economies of scale, the liability insurance industry lacks the other product characteristics proposed by George Stigler as predisposing an industry to cartelization. Cheating on a cartel price would be easy because transactions prices are unobservable in advance and may be adjusted afterwards by rebates, dividends, and other retroactive adjustments. Even if the nominal price could be observed, the multidimensional nature of the insurance product makes it easy to chisel by adjusting the nonprice dimensions of the contract, particularly in lines that are commonly sold as a package. Since there are no significant diseconomies of scale or regulatory obstacles to expanding market share, a strategy of cutting below the cartel price would offer much greater potential profit than a strategy of adhering as long as other firms adhere; but since that is true for each firm, any attempt to cartelize is likely to collapse.

Although collective activities may have been used to maintain noncompetitive prices historically, with the present competitive structure of the industry collective activities can continue to survive only to the extent that they reduce costs for subscribing firms. An insurance firm must perform multiple functions. They include the actuarial functions of forecasting and setting rates, publishing rates and policy forms and distributing them to sales personnel and agents, underwriting and selecting policyholders, processing claims, filing rates, and meeting other regulatory requirements. The minimum efficient scale for performing those different functions varies. There are significant scale economies in estimating loss costs, producing rate manuals and forms, and dealing with regulators, whereas the minimum efficient scale for dealing with policyholders may be quite small. Moreover, even a very large firm may have small premium volume in many states

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and lines, particularly in commercial lines where there are advantages to both the policyholder and the insurer if all coverages in all states are written through a single insurer.

Rate service organizations permit firms to pool those functions for which their own scale of operations is less than the minimum efficient size. That not only allows small firms to survive, but also enables large firms to operate efficiently in more states and lines. The common argument that rating bureaus permit the survival of inefficient, small firms is misleading. It ignores the multifunctional nature of firms. More fundamentally, it ignores the fact that minimum efficient scale is not an absolute but depends on institutional factors that determine the relative costs of contracting out services versus performing them in-house. Because rate service organizations reduce the costs of contracting out those services that are optimally performed on a large scale, they reduce the minimum efficient scale of operation for the individual firm and thereby increase the number of potential competitors in any market and facilitate entry.

Not surprisingly, small firms are most strongly opposed to repeal of the McCarran-Ferguson Act. A short-sighted view is that the act permits large firms to collude in setting prices above the competitive level so that the more efficient large firms can earn excess profits and the inefficient small firms that would not survive if the larger firms priced at competitive levels can stay in business. But that view is hard to reconcile with the fact that the largest firms that are allegedly making excess profits are the most willing to modify the McCarran-Ferguson Act in favor of safe-harbor legislation. In addition, the evidence simply does not support the allegation that large firms have adhered to the advisory rates promulgated by the Insurance Services Office, which is essential behavior for an effective cartel.

Of course, in setting recommended rates, bureaus may well recommend rates at levels that maximize expected profits for members. But the profit-maximizing price will not differ significantly from the competitive price because the demand facing bureau firms is highly elastic as long as there are no adherence requirements and the regulatory costs of deviating from filed rates are minimal.

In an earlier study I examined empirical evidence to test which of the two models of rating bureaus—the cartel model and the service model—was most consistent with the facts. The cartel model predicts that large firms would be more likely than small firms to adhere to bureau rates and that bureaus would only survive if a dominant market share of firms writes policies at bureau rates. By contrast, the service model predicts that small firms would be more likely than large firms to file bureau rates (or large firms in markets where they have small volume) and that a dominant market share at bureau rates is not critical to the survival of bureaus. Both models predict greater use of Insurance Services Office rates in states with prior approval rating laws than in those with competitive rating laws. Under the cartel model rate regulation is a device for enforcing cartel rates; under the service model bureau rating services are more valuable in heavily regulated states because the costs of making an independent filing are higher.

A review of data from several sources on pricing for automobile insurance concluded that the evidence was much more consistent with the service model than with the cartel model of rating bureaus. Large firms were more likely to deviate than small firms, and significantly less than half of premium volume was written at bureaus rates, even in prior approval states. Furthermore, a substantial fraction of the deviations were upward, not downward, from bureau rates, which is not predicted if the bureau rates are at joint-profit-maximizing levels. That result is not hard to reconcile with the service model in which the bureau rate simply acts as a useful benchmark from which firms deviate upward or downward, depending on how they assess their own information and experience relative to the market average.

Although rate bureaus may recommend rates that maximize expected profits for members, the profit-maximizing price will not differ significantly from the competitive price.

Robert Bork argues that concerted action, including horizontal price-fixing, may be socially efficient if it is ancillary to some other purpose (in this case cost reduction). He points out that it is inconsistent for antitrust policy to outlaw actions in concert by two or more firms if the same actions

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would be legal if the firms were to merge. If the principles applied to mergers are also applied to concerted action, then the threat from Insurance Services Office cartelization is trivial: the market share of firms writing at Insurance Services Office rates was typically under 30 percent in the auto markets for which data were available.

The increase in insurer losses—exacerbated by a decline in interest rates that tends to increase the fair premium for long-tailed lines of insurance—was the overwhelming contributing factor to the crisis in liability insurance.

The only other study that has attempted to test empirically the impact of bureau rates on market prices, rather than simply assert collusion, is a recent study of pricing in workers' compensation by Ann Carroll. Although the study lacked direct data on the fraction of the market written at bureau rates, the general conclusion was that there was no evidence that the operation of rating bureaus contributed to prices or profits above the competitive level. Thus, the empirical evidence tends to support the theory that cartelization of the insurance industry is impractical even when bureaus publish advisory rates.

Evidence of Excessive Prices?

Did noncompetitive practices of insurers contribute to the crisis in liability insurance? As already noted, careful analyses of trends in claim costs during that period conclude that the increase in insurer losses was the overwhelming contributing factor—exacerbated by a decline in interest rates that tends to increase the fair premium for long-tailed lines of insurance. Further evidence that the problem was rising liability costs rather than inappropriate insurance practices is the fact that premium increases were at least as dramatic for medical malpractice written by physician-owned mutuals, which no one has accused of being out to gouge their policyholders.

The issues that were the subject of the antitrust suit filed by the attorneys general were the proposal to change the standard policy from an occurrence to a claims-made form, to exclude coverage of pollution from standard coverages, and to include legal defense in the limits of the policy. The switch to a claims-made form is consistent with an optimal sharing of risk when risk is largely undiversifiable: it is a rational response when trends in liability rules become highly uncertain, and it has been adopted widely for medical malpractice, including by some of the physician-owned mutuals. The pollution exclusion was again a rational attempt to limit the insurer's exposure once the courts began to interpret the more modest restrictions on pollution coverage as if they were nonexistent. Essentially the only way to control exposure for pollution was to exclude it entirely from the policy. Finally, given the rising costs of legal defense and the weak incentives of policyholders to cooperate in controlling defense costs if they are fully covered by the insurance contract, it is a rational sharing rule to include those expenses in the limits of the coverage under the contract.

Are Customers Crazy or Colluders?

The position taken by the Risk and Insurance Management Society, Inc., an organization representing over 4,000 corporate, governmental, and nonprofit consumers of insurance, further supports the service model rather than the cartel model of rate service organizations. In August 1988 the society opposed the repeal of the McCarran-Ferguson Act. It asserted that while it shares the free-market philosophy, when state regulatory supervision is adequate, the limited antitrust immunity the act affords insurers can enhance competition and benefit the consumer. The society also noted that modification of the act might suppress the small carrier's independence and thus reduce competition.

The Risk and Insurance Management Society asserted: "To the extent that price gouging occurred in the last market cycle, advisory rates promulgated by the insurance industry had no bearing. With the collapse of capacity . . . individual insurers with any precious capacity left had tremendous leverage to exact huge premium increases. However, while the industry has rarely adhered to advisory rates in either hard or soft markets, these rates are a valuable benchmark for consumers and regulators to determine whether a premium charged by an individual carrier is overpriced or underpriced for the risk underwritten."

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Although the society strongly opposed the introduction of the claims-made policy form that was the focus of the antitrust suit filed by the attorneys general, the group urged that no modification of the act be made that would discourage the development of common policy forms. If insurers used different forms, "even the most sophisticated insureds would be confused as to what they were buying." The society also noted that coverage litigation involving benchmark forms has settled the meaning of many contract terms.

In addition to its desire to preserve common forms and advisory rates, the society has opposed modification of the act because of the regulatory uncertainty that it would introduce. Pointing out that operating a nationwide insurance program through regulatory compliance in over fifty jurisdictions is no easy task, the group asserted that its greatest fear is "the ad hoc evolution of joint federal-state regulation where the parameters of each one's authority are not defined and carriers, fearful of antitrust ramifications, are afraid to act." The organization also endorsed insurer-initiated underwriting associations that "can improve insurer efficiency and mean the difference between coverage being written or not being available at all." With respect to the liability insurance crisis, the Risk and Insurance Management Society asserted that it could not understand how modifications to the McCarran-Ferguson Act would have mitigated the last crisis or will moderate future insurance cycles.

The Risk and Insurance Management Society's position is far from a blanket endorsement of the status quo. It criticizes the Insurance Services Office for attempting to introduce the claims-made form, to eliminate pollution coverage, and to include litigation expense in the policy limits. It also urges state regulators to "get their own houses in order." But it points forcefully to the value to consumers of the cooperative activities of rate service organizations, including publishing advisory rates. It also points to the threats of legal uncertainty if the act is modified or repealed. The group has concluded that the policyholder will not benefit in terms of the availability, cost, or quality of the insurance product if the act is repealed or modified.

It seems unlikely that an organization such as the Risk and Insurance Management Society, which represents consumers of insurance (as opposed to self-designated consumer advocacy organizations), would favor retaining legislation that facilitates price-gouging by insurers. In 1991 the organization dropped its opposition to change in the McCarran-Ferguson Act, after concluding that continued dispute was deflecting resources and attention from other pressing issues and proving unproductive for the insurance industry and its consumers. It remains to be seen whether proponents of repeal will also be willing to compromise, to preserve those cooperative insurance activities that benefit consumers, and then move on to address the inefficiencies in the liability system that are the real cause of high costs of liability insurance.

It remains to be seen whether proponents of repeal will also be willing to compromise, to preserve those cooperative insurance activities that benefit consumers.

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Carroll, A. "The Determinants of Market Structure for Workers' Compensation Insurance." Ph.D. dissertation, University of Pennsylvania, 1991.

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Regulation and the Automobile Insurance Crisis

J. David Cummins and Mary A. Weiss

As the price of automobile insurance continues to escalate, insurance buyers have become increasingly dissatisfied. Between 1984 and 1989 the annual rate of inflation in automobile insurance was 10.8 percent, contrasted with an inflation rate in the consumer price index of only 3.5 percent. The 10.8 percent figure is a national average; prices have risen more rapidly in states with serious insurance problems and for drivers with certain characteristics. It is not unusual for drivers in urban areas such as Philadelphia and Los Angeles to pay annual premiums exceeding $3,000. For some drivers the price of insurance has begun to approach the value of their insured vehicles. Not surprisingly, those high premiums have forced many drivers in urban areas to go without insurance. That practice further increases prices for drivers who continue to buy coverage, as prices for the uninsured motorist component of the auto policy rise more rapidly. What has gone wrong with auto insurance and what, if anything, can be done to solve the problem?

J. David Cummins is the Harry J. Loman Professor of Insurance at the Wharton School of the University of Pennsylvania. Mary A. Weiss is an assistant professor of risk management and insurance at Temple University.

Consumers and consumer organizations in many states have targeted the auto insurance industry as the primary source of the auto insurance crisis. Insurers have been accused of creating the auto insurance crisis through inefficient management, anticompetitive practices, and lax claims settlement policies. The contention is that insurers are "fat cats" who have had excessive freedom in generating exorbitant expenses, which are then passed along to the consumer in the form of higher premiums. That view has provided the underpinnings for the new regulatory movement in auto insurance. The most highly publicized example of the new wave of auto insurance regulation was California's Proposition 103.

Approved by California voters in 1989, Proposition 103 enacted sweeping changes in auto insurance regulation. It rolled back premium rates by 20 percent, reestablished rate regulation in a state where rates had been unregulated for decades, and called for an elected insurance commissioner. Although the rate rollback was later overturned by the courts, most of the Proposition 103 provisions have gone into effect. Less publicized but equally important changes have taken place in other states with auto insurance problems such as Pennsylvania, Massachusetts, and New Jersey. In addition to actions taken by individual states, attention on the national level has been directed at potential federal intervention. Insurers have long enjoyed

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an exemption from federal antitrust laws under the McCarran-Ferguson Act, passed in 1945. As insurance problems have escalated, pressure has grown to repeal McCarran-Ferguson and to subject insurers to additional federal oversight. Is additional state and federal regulation the solution to the auto insurance crisis? We examine the auto insurance problem with particular emphasis on the role of regulation as a potential solution.

Trends in Insurance Regulation

Insurance is one of the most heavily regulated industries in the economy. Although regulation has existed for many years, considerable confusion exists about the purposes of regulation and its potential for solving problems in insurance markets. Many insurance buyers and consumer organizations view regulation as a panacea for any problem that develops in the market. Although regulation can help in some instances, it can also create or exacerbate existing problems. In many cases the best approach may be less rather than more regulation or different, more imaginative regulatory approaches, rather than the intrusive approaches that have been used traditionally. Since the U.S. economy is based on free-market principles, regulatory programs should be designed to complement rather than substitute for the operation of the market system.

Traditionally, states have regulated the insurance industry. Constitutional authority for state regulation in insurance was provided by the 1869 court case, *Paul* v. *Virginia,* decided by the U.S. Supreme Court. As a result of that case, insurance was regulated almost exclusively by the states for the following seventy-five years. State regulation proved to be inconsistent and ineffectual. By the 1930s there was a cartel of property-liability insurers that engaged in widespread anticompetitive practices such as price-fixing, allocation of markets, and boycott and intimidation of companies and agents that tried to challenge the cartel. Eventually, the U.S. attorney general intervened. The result was the landmark *Southeastern Underwriters* case, decided by the Supreme Court in 1944. That case overturned *Paul* v. *Virginia* and raised the possibility of transferring regulatory authority from the states to the federal government. Because the states had a financial interest in maintaining state regulation (states collect millions of dollars per year in state premium tax revenues), they were able to prevail on Congress to pass the McCarran-Ferguson Act. The act stated that continued state regulation and taxation of insurance was in the public interest and exempted insurers from federal antitrust laws (except for boycott, intimidation, and coercion) to the extent that the states enforced antitrust. In response to McCarran-Ferguson, states enacted new antitrust and rate regulatory laws. In addition, state regulators continued to focus on insolvency.

Rate Regulation. Most of the post-McCarran rate regulatory laws stipulate that rates should not be "excessive, inadequate, or unfairly discriminatory." Most states require companies to obtain *prior approval* from the state insurance commissioner for changes in rates. An important provision allows insurers to pool data through organizations known as *rating bureaus.* Rating bureaus (such as the Insurance Services Office) collect data and make it available to member companies for ratemaking. In addition, for many years the bureaus filed rates on behalf of their member companies so that most insurers doing business in any given state had the same rate structure. The Insurance Services Office voluntarily ended that practice in 1989. Pooling of data is still practiced and permissible, however.

Consumers and consumer organizations have accused the auto insurance industry of raising rates through inefficient management, anticompetitive practices, and lax claims settlement policies.

As insurance inflation emerged as a problem in the late 1960s and early 1970s, regulators began to place more emphasis on regulating rates. They devoted particular attention to the issue of investment income in ratemaking. Insurers collect premiums in advance of losses and hold the funds until losses are paid. In lines such as liability insurance, a considerable period of time may elapse between the premium collection and loss settlement dates. During that time period, insurers earn interest on policyholder funds held in reserves. Traditionally, there was no formal credit in premium rates for the interest income, which was referred to in the industry as "banking profits." As

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interest rates rose during the 1960s, regulators began to take a closer look at the banking profits, and many states now require that investment income be recognized in the rates. That continues to be a controversial area of regulation.

About half the states regulate automobile insurance rates. Those states typically require prior approval of rate changes. Most other states have some form of "competitive" rating law that affords insurers more freedom in filing and changing rates. During the 1970s there was a trend toward competitive rating in automobile insurance. The prevailing economic theory (the late George Stigler's hypothesis) was that regulators tended to become "captured" by the regulated industry so that regulators work for the benefit of the industry rather than the public. In fact, in some industries regulated prices were higher than competitive prices. Although researchers have found that premium rates tended to decline in some states after regulatory repeal, the more consistent finding has been that regulation tends to depress premiums. On the whole, auto insurance prices tend to be lower in regulated states than in competitive states, a result that conflicts with Stigler's theory.

About half the states regulate automobile insurance rates. Most other states have some form of "competitive" rating law that allows insurers more freedom in filing and changing rates.

Some observers point to the higher prices in unregulated ("competitive") states as evidence that insurance markets are not really competitive. They argue that the regulated prices are appropriate and provide insurers with fair profits, whereas the prices in so-called competitive jurisdictions are excessive. Others contend that insurance markets are competitive and hence that prices in competitive states are appropriate. They argue that regulators have tended to politicize the regulatory process with the result that insurers have not been permitted to earn fair profits in many regulated states. Availability and service problems may have developed in insurance markets as a result of that restrictive regulation.

Antitrust. The effectiveness of state antitrust regulation has also been called into question. Critics claim that states have been excessively lenient in permitting insurers to pool data and engage in cooperative ratemaking. The alleged result has been inefficiency and inordinate prices. The proposed remedy is to repeal the McCarran-Ferguson Act and to impose federal regulation. The validity of that approach hinges on the contention that insurers are inefficient and that insurance markets are noncompetitive.

Solvency Regulation. The traditional focus of regulation has been the maintenance of solvency. Insurers are required to file extensive financial reports ("annual statements") with state insurance commissioners. Commissioners also conduct detailed audits of all insurers at three- to five-year intervals. Although insurance solvency regulation absorbs a high proportion of the resources of the state regulatory system, it has been criticized as lax and ineffectual. Insolvency rates have grown in recent years, and there have been highly publicized instances of very large insurer insolvencies such as Mission Insurance, Transit Casualty, and Integrity Insurance Company. Clearly, state insurance commissioners did not take adequate steps to police irresponsible underwriting and financial manipulation.

In response to an earlier insolvency crisis, during the late 1960s, almost all states created insurance *guaranty funds* to pay the claims of policyholders of insolvent insurers. Guaranty funds work by assessing solvent insurers to discharge the obligations of firms that have failed. Although the system has been fairly effective in compensating claimants, it has also drawn criticism for potentially exacerbating the insolvency problem. Because guaranty funds protect policyholders from the consequences of insolvency but do not penalize the insurance company that takes excessive risk, they create an incentive for insurers to adopt riskier strategies. Because policyholders are protected from insurer insolvency by guaranty funds, they have a reduced incentive to seek out safe, stable insurers. Insurers are assessed by guaranty funds without any regard to the degree of risk they place on the fund. Thus, insurers can afford to increase risk (and their expected return), for example, by investing in riskier assets to increase investment income, without having to pay higher guaranty fund charges. That practice may lead to higher rates of insolvency and an increasing spiral of growing guaranty fund assessments.

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Regulators are working at cross purposes in other ways with regard to maintaining insurance solvency. Although regulators have the obligation to protect the public against insurance insolvencies, rate regulation has tended to depress insurance rates. To the extent that rates are reduced below the fair competitive level, insurance companies are weakened financially. Thus, politicized rate regulation that places an added financial burden on the industry may lead to higher insolvency rates.

Rate Tempering and Market Failure

Regulators also have the responsibility to maintain rate *equity*. Rate equity is stipulated as a regulatory goal in insurance rating statutes through the requirement that rates not be "unfairly discriminatory." The usual definition of unfair discrimination is the existence of rate differentials that are not justified by cost differentials. For example, charging policyholders different rates although their expected losses are approximately the same would be viewed as unfairly discriminatory.

Although the goal of rate equity sounds reasonable in principle, as is the case with many regulatory goals, implementing the rate equity standard can have unintended adverse effects. The goal of equity interacts with that of *affordability*. As auto insurance prices have risen, political pressures have developed to hold down rates for drivers subject to higher prices. Statistically, certain types of drivers, such as youthful males, and certain geographical areas, such as inner cities, are subject to higher claims rates. The response of the insurance industry has been to charge higher prices to drivers in those categories.

Political opponents of the insurance industry's cost-based rating system have criticized that system by using several lines of attack. One is to contend that the industry's cost-based ratings are inaccurate. Opponents point to considerable *overlap* among drivers in various risk groups. They argue that relatively good drivers in high-rate categories such as inner cities may have lower loss costs than relatively bad drivers in low-rate classes and territories. Insurance rate classes are said to be overly heterogeneous; they group together drivers with significantly different expected losses and charge them the same premium rates. Second, opponents argue that rate classes rely too heavily on *proxy variables*. For example, women on average drive less than men, and so insurers use gender rating as a proxy for mileage, which is difficult to measure. The industry's critics call for the elimination of inaccurate classification criteria and proxy variables such as gender.

Some critics go even further by suggesting the flattening of rates across categories of drivers. They argue that it is socially inequitable for residents of cities to pay insurance rates that are four to five times as high as rates in the suburbs. Such rates may force urban drivers to go without insurance or to forgo driving altogether. This is said to create severe economic inequities by making it more difficult for urban drivers to get to work and thus possibly restricting their employment opportunities. In response to such criticism, policymakers in densely populated states with high insurance premiums such as New Jersey and Massachusetts have flattened or "tempered" rate categories to ease the premium burden on urban drivers.

While it is easy to sympathize with the social and economic problems of urban drivers, it is also important to recognize that rate tempering can have severe consequences for insurance markets. Economists have identified risk classification as a critical element in the economic viability of the insurance system. If insurers cannot charge premiums to drivers that fully recognize cost differences, low-cost ("low-risk") drivers end up subsidizing high-risk drivers because the low-risk drivers pay premiums in excess of their costs and high-risk drivers pay premiums that are less than their costs. Because the high-risk drivers are subsidized, they have a stronger incentive to buy insurance and may purchase higher coverage limits. The subsidies that are imposed on low-risk drivers, on the other hand, give those motorists an incentive to purchase lower coverage limits—the minimal coverage required by law—or to drop

As auto insurance prices have risen, political pressures have developed to hold down rates for drivers subject to higher prices. Rate tempering can have severe consequences for insurance markets.

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out of the insurance market altogether. With high risks comprising a larger component of the market, average costs will increase and premium rates must go up. The resulting increase in insurance inflation worsens the subsidy problem and may force additional low risks out of the market. The resulting price spiral ultimately may lead to market failure and the collapse of the insurance market.

A direct subsidy to urban drivers that could be used only for the purchase of basic auto insurance coverage would permit the insurance market to operate properly.

Market failure has occurred in two states that have long had severe insurance problems—New Jersey and Massachusetts. Both states have very high insurance rates because insurance costs are high. Insurance costs are high in those states because of high accident rates, high auto theft rates, and, at least in New Jersey, generous medical benefits provided in automobile insurance policies. Because of the high costs in those states, political pressures for rate relief have been intense for the past fifteen to twenty years. Both states have undertaken strict prior approval rate regulation that has made auto insurance unprofitable for the insurance industry. In addition, both states have engaged in rate tempering to reduce the cost burden on urban residents. As a result, the voluntary market for auto insurance has virtually ceased to exist. More than 50 percent of the drivers in each state are in the *residual market,* which provides a mechanism for insuring drivers who cannot obtain insurance in the normal voluntary insurance market. Having more than 50 percent of drivers in the residual market implies that insurers do not want to write insurance coverage on most drivers in the state. Thus, the companies have concluded that they cannot earn a fair profit on those policies. That market failure is due to premium tempering and restrictive rate regulation.

When a high proportion of drivers are being assigned to insurance companies involuntarily, the logical question is: Why do insurers not pull out of the market altogether in states like New Jersey and Massachusetts? Regulators engage in a form of regulatory blackmail to prevent insurers from withdrawing from the auto insurance market. Most insurers are not auto insurance specialists but rather write various types of insurance. A high proportion of revenues for most companies is derived from commercial coverages such as workers' compensation, commercial multiple peril, commercial auto, and general liability. If a company indicates its intention to withdraw from the private passenger automobile insurance market, the usual regulatory response is to threaten to cancel the insurer's licenses to write all types of coverage in the state. Thus, the insurer would have to give up profitable commercial writings to leave the auto market. Most insurers cannot afford to drop their commercial writings and thus are forced to absorb the losses imposed by restrictive auto insurance regulation.

The ramifications of restrictive regulation are even more far-reaching. Although companies may not be able to withdraw completely from unprofitable markets, there are other steps they can legally take to recoup lost profits. For example, insurers may cut back on services or delay claim payments to save money. Thus, buyers pay lower premiums than would be charged in the absence of regulation but also receive less valuable insurance coverage.

If restrictive rate regulation and rate tempering are not the answer to the social problems caused by high auto insurance costs, what should be done to provide rate relief to drivers in urban areas? The more appropriate approach would be a direct subsidy to such drivers that could be used only for the purchase of basic automobile insurance coverage. That would permit the insurance market to operate properly, providing the level of services and insurance availability desired by the majority of drivers, and would put an end to the destabilization created by regulatory tinkering.

It should be clear from this discussion that insurance regulation is a rather risky proposition. Well-intentioned regulatory responses may not only fail to solve problems but may actually destabilize markets. Most observers agree that it would be better to rely on competition to set prices and determine the services offered in the insurance market. That is not a viable option if the industry is not competitive, however.

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The Auto Insurance Industry: Market Structure

The competitiveness or noncompetitiveness of the insurance industry has been the source of considerable controversy. On one side are the insurers, who contend that the industry is competitive and efficient and doing the best possible job under difficult circumstances. On the other side are consumers, consumer-activists, and many politicians, who accuse the industry of being inefficient and anticompetitive. The usual allegation is that the industry is earning excessive profits by pocketing investment income earned on policyholders' funds. To sort out the conflicting claims, we shall examine the structure, competitiveness, and profitability of the industry.

Although there are about 1,300 property-liability insurance companies and groups, the number of companies operating in any given market is considerably smaller because some firms specialize, either by line of business or by geographical area. To obtain a more accurate indication of the number of competitors, it is necessary to look at insurance markets by line of business and by state. In private passenger auto insurance the number of companies doing business in 1990 ranged from 35 in Hawaii to 150 in Illinois. The median number of companies by state was 97. The median of 97 firms is a sufficient number for competition to be at least potentially present. It is important to keep in mind, however, that not all insurers operating in a given state write business in all parts of the state and that some insurers do not issue coverage voluntarily on all types of drivers. Thus, competition may be present for the most economically attractive regions and driver types, but drivers with less desirable rating characteristics may tend to face limited options with regard to potential insurers. Enabling insurers to charge adequate rates in the "high risk" areas would lead to more competition in those markets.

Another indicator of market structure is the concentration ratio. Nationally, the leading firm, State Farm, accounts for 21 percent of the total premium volume in private passenger auto insurance. The top four firms account for 43.9 percent. By normal standards, that is not a level of concentration that would pose a significant threat to competition. In some states concentration is considerably higher, however. The four-firm concentration ratio ranges from 33 percent in New Hampshire to 81 percent in Alaska, and the median four-firm ratio is 57 percent. The median twenty-firm concentration ratio is 86 percent. Those levels of concentration are much higher than the national ratios usually mentioned in discussions of insurance markets and could conceivably be high enough to pose a competitive threat, depending on the other characteristics of the market.

"Oh, that! That just says that if you put in a claim — you're history."

Marketing Systems and Efficiency. One reason that most economists are not concerned about the overall level of concentration in the auto insurance market is that the market leaders have acquired their high market shares primarily by being more efficient. The efficiencies come primarily in marketing or distribution costs. On

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average, about one-fourth of the auto insurance premium goes for company marketing and administrative expenses. That component covers insurance home office expenses as well as marketing costs. Most of the market leaders in auto insurance use a distribution or marketing system called *direct writing.* Direct writers sell directly to the public either by using mail or telemarketing or by retaining *exclusive agents*—agents who represent only one company. State Farm, Allstate, and Nationwide all use exclusive agents. Other companies, including the more traditional firms such as Aetna, Travelers, and CIGNA, use another form of distribution system—independent agents. *Independent agents* represent several companies rather than place business exclusively with one company.

Although there are good reasons for the existence of independent agents, especially in the commercial lines, that distribution system is generally not so effective as direct writing for personal lines such as auto insurance. In 1990 the average expense ratio in private passenger auto insurance was 19.7 percent for direct writing companies and 28.8 percent for independent agency companies. Most of that differential is attributable to marketing costs. Although independent agents may provide more services in some instances, consumer surveys by organizations such as Consumers Union show no systematic service differential between independent and direct writing companies. In fact, direct writing companies regularly show up among the top rated firms in those surveys.

Increasing concentration in the private passenger auto insurance market is not necessarily anticompetitive because it brings greater efficiency to the market.

As a result of their efficiency advantage, direct writers now account for two-thirds of the personal auto insurance market. Because of the resources required to maintain an exclusive agency system, direct writers on average are larger than independent agency firms. But that larger scale generally is associated with more efficiency. Thus, increasing concentration in the private passenger auto insurance market is not necessarily anticompetitive because it brings greater efficiency to the market. As long as the market leaders do not become collusive or excessively profitable, market concentration in insurance should not be viewed automatically as providing a rationale for additional regulation.

Profitability. Profitability is perhaps the most confusing issue in the public policy debate on the auto insurance crisis. Insurers point out that they pay out billions of dollars more in losses and expenses than they take in each year in premiums: they almost always incur a large *underwriting loss* (defined as premiums minus losses and expenses). Consumer activists counter that insurers earn billions in investment income on policyholder funds that result in excessive profits. Both sides in this instance are factually correct. Insurers do incur underwriting losses and earn investment income. Neither side gives sufficient attention to the fact that it is the *net amount* earned by insurers that is relevant. That concept is pivotal, because it underlies both the rationale for and implementation of new insurance regulations in important regulatory jurisdictions across the country.

The first step in understanding the profitability issue is to realize that insurers must come to the market with equity capital, supplied by either stockholders or policyholders. Equity capital allows the company to offer the credible promise that claims will be paid when due. It provides a cushion to cover the eventuality that losses and expenses are higher than expected. As part of the solvency surveillance system, state regulators require that insurers maintain a reasonable amount of equity capital relative to premium writings.

Because equity capital has other potential uses besides backing up insurance liabilities, it is available only at a price, known as the *cost of capital.* Instead of putting funds into an insurance company, suppliers of equity capital can invest in other sectors of the economy. To attract capital into insurance, investors must receive a rate of return that is comparable to the return they can earn in other sectors of the economy on investments of *comparable risk.* The comparable risk standard provides the conceptual underpinnings for insurance rate regulation, and the same general concept applies to public utilities and other regulated industries.

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Although there is little debate about the appropriateness of the comparable risk standard, the measurement of risk and return in insurance is plagued by controversy and serious pitfalls. Economists tend to agree that the appropriate rate of return for regulatory purposes is the *market rate of return* on equity. In concept, market return is easy to calculate. For example, assume that one invests $100 in a share of stock and sells it one year later for $115, after receiving a dividend of $5. The total amount received is $120 on a total investment of $100, for a return of 20 percent. The same concept applies in insurance. If investors put $100 million in equity into an insurance company, they expect to receive their investment back at the end of the year along with an adequate rate of return. Of course, expectations are not always realized. The investors may earn more or less than the expected amount, but that risk is one of the primary factors contributing to the need for the fair expected rate of return.

Measuring the fair rate of return in insurance is quite controversial. On one side are consumerists and many state regulators, who argue that the appropriate rate of return is the *book return* as shown on the company's financial statements. On the other side are most economists and a few regulators, who contend that the *market return* is the appropriate measure. Book return proponents usually place the cost of capital in insurance somewhere in the 10 to 12 percent range. Market return measures are usually higher, in the 15 to 17 percent range.

In principle, rate of return analysis is simple. Consider a simplified income statement for a hypothetical company with premiums of $100, losses of $90, expenses of $20, an underwriting profit of ($10), investment income of $30, and a net income (underwriting loss plus investment income) of $20. If the company has $100 in equity capital, the book rate of return is 20 percent.

The reason the company has an underwriting loss, on the average, is that it is earning investment income on policyholder funds. Part of the investment income of $30 is attributable to the investment of the premium of $100. That part of the investment earnings, less an appropriate profit, should be credited to policyholders in the rates. That is what the regulatory and actuarial methodologies designed to reflect investment income in the rates attempt to do. Thus, an important aspect of insurance rate of return analysis is the following principle: *an underwriting loss is the expected outcome in most cases because it provides a credit for investment income on policyholder funds.* That principle also applies in market rate of return analyses, but the ways of measuring the return differ.

If insurance accounting statements accurately reflected market values of assets and liabilities, the book versus market controversy would not exist because book and market returns would be equivalent. In reality, however, insurance accounting statements are an imperfect proxy for true market values. Consequently, calculating the rate of return on equity by using book data introduces serious errors.

Most regulatory applications of the book return methodology are based on *statutory* accounting data—data compiled in accordance with the regulations set forth by state insurance commissioners. Statutory accounting rules are designed primarily to provide a conservative indication of insurer solvency levels; they do not provide an accurate indication of market values. For example, bonds, which consistitute the largest single asset type on insurance company balance sheets, are valued at amortized cost rather than at market values. Loss reserves, the largest single liability item, are valued for statutory purposes at nominal values rather than at the discounted present values that would be used in a market valuation. There are numerous other statutory accounting anomalies that drive a wedge between statutory rates of return on equity and the market returns that should form the basis for regulatory rate of return analysis.

Measuring the fair rate of return in insurance is controversial. Consumerists and many state regulators argue that the appropriate rate of return is the book return. Economists and a few regulators contend that the market return is the appropriate measure.

Another important measurement issue in book rate of return analysis is the measurement of equity capital. The accounting definition of equity is assets minus liabilities: the total value of resources of the firm (assets) minus the amount

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owed to policyholders and others is the amount available to equity holders. Book equity, computed in that way, is the denominator in the book rate of return measure.

Regulators and consumerists who use book rate of return analysis in insurance invariably make significant errors in measuring both book income and equity. As a result, book rate of return measures are virtually meaningless. Unfortunately, such measures have been used to set regulatory policy in important jurisdictions such as California, although appropriate market value techniques are readily available.

It is appropriate for policymakers to be aware of the realized book and market rates of return of the insurance industry as long as it is understood that realized returns over some prior period are not necessarily equal to expected returns in the future.

Regulatory book return analyses also usually ignore unrealized capital gains. Insurers and other investors purchase stocks with the expectation of earning a rate of return that includes both dividends and capital gains. The dividend return alone would not be adequate to induce investors to buy stocks, and no one outside the insurance regulatory community seriously advances a dividends-only theory of stock returns. Nevertheless, the approach used by most insurance regulators ignores unrealized capital gains.

Another fundamental mistake made by most insurance regulators is the failure to recognize the difference between *expected returns* and *realized returns*. Investors buy stocks with the *expectation* of earning a rate of return commensurate with the risk borne. For example, the investor might expect a rate of return of 15 percent on a stock of average risk. After holding the stock for some period of time, however, the investor may find that the actual rate of return has been less than 15 percent, say 5 percent. Although the investor will obviously be disappointed that his expectation was not borne out in that particular case, achieving a 5 percent realized return does not mean that the true expected return on the stock was 5 percent. Stocks are risky, and expectations are not always realized. The expected return on the stock during the coming period will be based on the company's prospects and the anticipated risk and cannot be equated with the realized return of the prior period.

The same analysis applies to insurance rate of return analysis. When the insurance industry goes through a period of low returns such as during 1984 and 1985, realized returns on both a book and a market value basis are very low. For example, the accounting return on equity in property-liability insurance was minus 1 percent in 1984. It should be obvious that the realization of a minus 1 percent return in 1984 does not imply that the expected rate of return on insurance stocks is minus 1 percent. No investor would buy a stock with an anticipated negative rate of return. Although regulators would not set the cost of capital in insurance at minus 1 percent, they regularly commit logical errors regarding realized versus expected returns by arbitrarily selecting historical time periods to compute book rates of return on equity and then using those returns as measures of expected returns in the future. Even if there were no difference between book and market rates of return on equity, it would be inappropriate to, say, use book return data from the period from 1981 to 1990 to estimate the appropriate rate of return on equity in insurance. That period was one of increasing risk and low returns in the insurance industry. Investors would not knowingly put their funds into a risky business such as insurance and expect to earn such low rates of return.

Insurance premiums should incorporate rates of return on equity adequate to attract capital into the industry on a prospective basis. If lower returns are used, the market will be destabilized, and price and availability problems will worsen. The inappropriate use of book rates of return in insurance regulation becomes a self-fulfilling prophecy. The appropriate way to measure the cost of capital in insurance is to use a prospective, market-value-based method. Such methods are discussed in textbooks on regulatory finance. Unfortunately, only a few regulatory jurisdictions are currently using such methods.

It is appropriate for policymakers to be aware of the realized book and market rates of return of the insurance industry as long as it is understood that realized returns over some prior period are not necessarily equal to anticipated returns in the future. Table 1 shows statutory accounting returns and returns based on generally accepted

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Table 1: Property-Casualty Insurance Industry Rate of Return on Equity (percent)

Year	Statutory	GAAP No UCGs	GAAP with UCGs
1976	11.4	11.4	19.3
1977	23.0	21.3	18.6
1978	21.9	20.2	21.0
1979	18.2	16.7	20.9
1980	15.5	14.3	20.1
1981	12.9	12.0	8.8
1982	9.5	9.1	12.4
1983	8.8	8.5	10.0
1984	1.3	1.9	−1.0
1985	2.6	4.3	9.2
1986	15.0	15.1	16.7
1987	13.8	16.7	14.8
1988	13.4	14.5	16.0
1989	9.7	10.2	14.0
1990	7.8	8.4	4.7
Averages:			
1976–1990	12.3	12.3	13.7
1981–1990	9.5	10.1	10.6
1986–1990	11.9	13.0	13.2

Note: GAAP is generally accepted accounting principles. UCGs are unrealized capital gains.

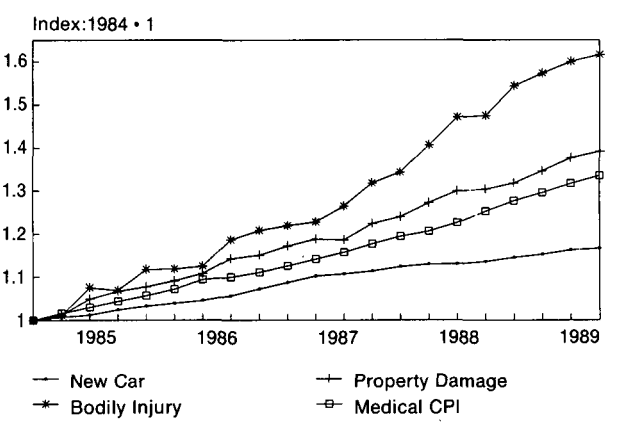
accounting principles (GAAP) for the period from 1976 to 1990. GAAP returns are based on the accounting rules set forth by the accounting profession for the certification of financial statements. GAAP accounting in general assumes that the firm is a *going concern*—it will continue operating in the future—whereas statutory accounting is based on the assumption that the firm will be liquidated. Statutory accounting is thus more conservative in general than GAAP accounting. Neither set of accounting rules produces market values, but GAAP returns are usually closer to market than statutory returns. Table 1 shows that the average statutory return over the period was 12.3 percent, while the average GAAP return was 12.3 percent, excluding unrealized capital gains, and 13.7 percent, including unrealized capital gains.

For purposes of comparison, the market returns on the Standard & Poor's Multiple Line and Property-Liability Insurer Stock Indexes for the period from 1986 to 1990 were .9 and 4.7 percent. The returns on those two indexes for the period from 1981 to 1990 were 8.2 and 10.1 percent. The returns on the Standard & Poor's 500 Stock Index for the periods from 1986 to 1990 and from 1981 to 1990 were 13.1 and 13.7 percent. Since the investment community views insurer stocks as average risk investments, those statistics indicate that the realized returns on insurer stocks have been significantly below the market-average returns for stocks of comparable risk. The conclusion to be drawn is that the 1980s were an especially difficult time for property-liability insurance companies. Insurers performed more poorly on a market value basis than other firms of comparable risk. Neither the book nor the market return statistics provide any evidence to support the allegation that insurers are earning excessive amounts of money from investment income on policyholder funds. Insurers in fact are not earning adequate rates of return to retain capital in the industry on a long-term basis.

Neither the book nor the market return statistics provide any evidence of insurers' earning excessive amounts of money from investment income on policyholder funds.

If insurers are not earning adequate returns, what has gone wrong? One major problem, which we have extensively documented elsewhere, is that insurers were hit by substantial unanticipated inflation in the costs of key goods and services paid for by insurance claim payments. Automobile insurance, the industry's major source of premium revenues, provides a case in point. Figure 1

Figure 1: Price Indexes, 1984–1989



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shows the pure premiums for bodily injury liability and property damage liability insurance. Pure premiums are a measure of loss costs per car, the most important determinant of premiums charged to consumers. Both pure premium indexes grew at a rapid rate during the period from 1984 to 1989. The annualized inflation rates were 10.3 percent for bodily injury liability insurance and 6.4 percent for property damage liability insurance. During that period the CPI inflation rate was just 3.5 percent. The price indexes for medical care and new cars, important determinants of claim costs, also are plotted in Figure 1. Auto insurance pure premium inflation occurred at an even more rapid rate than those claim cost components.

By delaying rate changes and using inaccurate ratemaking methods and erroneous cost of capital measures, regulators unfairly penalize insurance company equity owners.

The consumerist view is that insurance claim costs have inflated rapidly owing to poor claims settlement practices by insurers. The usual argument is that insurers just settle claims and then pass the costs along to the buyer. The contention is that such a cost-plus pricing scheme provides no incentives for insurers to settle claims conscientiously. Although plausible on the surface, that argument does not stand up to rigorous examination. In fact, insurance premiums are set *before* claims are paid. Insurers cannot go back to the policyholders for additional premium payments if claims are higher than expected. If insurers can save $1 in claim payments, that $1 goes directly into profits. Conversely, paying excessive claims means a direct reduction in profits. Thus, insurers have every incentive to minimize claim payments.

The real problem is not insurer claim settlement procedures, but rather the rapid inflation in the costs of insured goods and services. Part of the reason for that is the poorly designed automobile insurance compensation system. Insurance compensation in most states is handled under the tort system, which has been shown to lead to higher claims inflation than well-designed no-fault plans. Several key states have no-fault insurance laws with low dollar-denominated thresholds for filing pain and suffering claims. We have shown elsewhere that dollar-denominated no-fault thresholds are associated with relatively high claim cost inflation. To reduce the inflation rate, states should adopt no-fault laws with strict verbal thresholds that remove small liability claims from the system. Adopting programs to reduce insurance fraud, as suggested by Herbert Weisberg and Richard Derrig, also provides a promising way to control claim costs.

In a high inflation environment such as the 1980s, rate regulation imposes an additional cost on insurers. By delaying rate changes and using inaccurate ratemaking methods and erroneous cost of capital estimates, regulators unfairly penalize insurance company equity owners. The difference between the Standard & Poor's insurance market index returns and the NYSE returns during the 1980s provides an approximate indicator of the maximum amount of the penalty. The difference between the NYSE return and the average of the two insurance index returns for the 1981 to 1990 period was about 4 percent. If one-fourth of that was due to regulation, the loss to equity holders would have been about $1 billion per year during the 1980s. The loss during the late 1980s would have been even larger.

Unless there is a change in the nature of insurance regulation, the stock market will build the regulatory penalty into its expectations regarding the performance of insurance stocks. Stock prices will fall until the anticipated earnings, when divided by the lower equity value, provide a rate of return commensurate with the risk of operating an insurance company. That will impose an additional penalty on insurance equity owners and may also have long-range effects on the ability of the insurance industry to raise new equity capital.

Figure 2, which shows the number of property-liability insurance company insolvencies by year during the 1980s, provides further evidence of deterioration in insurance markets. During the crisis years of 1984 to 1986, the number of failures averaged about twenty-four per year. As insurance profitability increased, the number of failures dropped to nineteen in 1987 and 1988. But the situation deteriorated from 1989 to 1991: forty-two insurers failed in 1989, thirty-two in 1990, and twenty-seven in 1991. Those statistics provide clear danger signals about the property-liability insurance market. Earnings are excessively low

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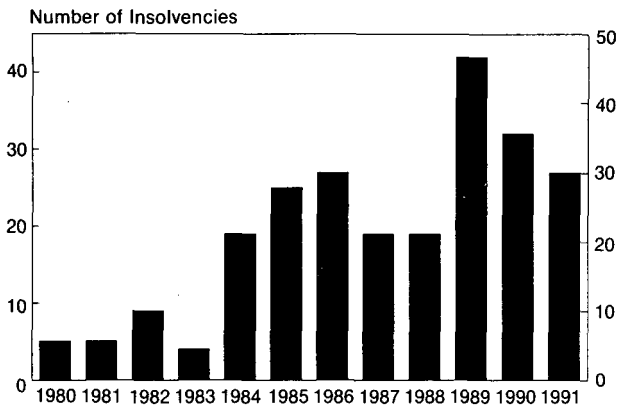
Figure 2: Insurance Insolvencies, 1980 to 1991



and an inordinate number of firms are failing. More restrictive rate regulation can only exacerbate the problem.

If regulation is not the answer, what should be done to bring insurance inflation under control? The only realistic solution is to cut inflation in insurance claim costs. Insurers can play a role in that process by operating more efficiently, especially in marketing, and by organizing efforts to halt insurance fraud. Reform of the legal system is also part of the answer. The major conclusion to be drawn is that regulation has probably done more harm than good in maintaining availability, affordability, and solvency in the auto insurance market. By providing temporary price relief, the regulatory system diverts the attention of public policymakers from finding realistic, effective measures to solve the insurance crisis.

Regulation has done more harm than good in maintaining availability, affordability, and solvency in the auto insurance market.

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Should Society Deal with the Earthquake Problem?

Howard Kunreuther, Neil Doherty, and Anne Kleffner

Everyone in California knows that it is just a matter of time before a part of the state is hit by a severe earthquake. The Loma Prieta earthquake, which interrupted the World Series of 1989 and caused approximately $10 billion in property losses in the San Francisco Bay area, was a grim reminder of the damage that such disasters can cause. An earthquake similar to the one that rocked San Francisco in 1906 is predicted to cause considerably more damage than the 1989 quake.

There are two complementary ways that residents and businesses in those hazard-prone areas can reduce the effect of a catastrophic earthquake on their property. They can adopt mitigation measures, such as anchoring their house to the foundation, which will reduce property losses in the event of a severe quake. In addition, they can reduce their recovery costs from a disaster by purchasing private insurance. To date those measures are voluntary since the attitude that we have taken in society is that people should recognize the dangers facing them and then adopt cost-effective protective measures.

Relatively few residents have taken loss mitigation measures, even after severe earthquakes. Many of those actions are cost-effective in saving lives, reducing injuries, and lowering property damage from future earthquakes. Most residents in California are also uninsured against shaking damage even though everyone has been informed by his homeowners' insurance company that earthquake insurance is available. Although insurance companies are required to offer earthquake insurance to policyholders who have homeowners' coverage, agents are reluctant to promote it widely. With their existing portfolio, insurers are concerned that a catastrophic quake will wreak financial havoc on their balance sheets and may lead to insolvency.

There is an additional interested party with a stake in the impact of a catastrophic quake on its welfare—the vast majority of the population not located in earthquake-prone areas. If the past is any guide to the future, then all taxpayers will help to pay for the uninsured losses of victims through some form of disaster assistance or low-interest loans. State government and municipalities affected by the quake will also have to turn to the federal government for assistance if a large number of public structures are damaged or

Howard Kunreuther is the Riklis Professor of Decision Sciences at the Wharton School of the University of Pennsylvania. Neil Doherty is a professor of insurance at the Wharton School. Anne Kleffner is an associate professor of insurance at the University of Calgary.

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destroyed. Those facilities are normally uninsured, and many have not adopted mitigation measures unless required by state or local building codes.

There are alternative ways of dealing with the earthquake problem that account for the decision processes of the affected interested parties. Homeowners facing a natural disaster often conclude that "it will not happen to me" or that the probability of the event is so low that it is not worth worrying about the consequences. In addition, they may utilize very short time horizons on which to base their decisions so that they do not capture the full benefits of adopting loss-reduction measures to their house. Insurers, on the other hand, focus on the impact of a catastrophic earthquake. They recognize that the chance of such an event may be very small, but they know that if it should happen, they may be forced to declare insolvency.

This article documents empirical evidence on the decision processes of homeowners and insurers with respect to the earthquake hazard and proposes a program that may be more efficient and equitable than the status quo.

Homeowners' Protective Behavior Regarding Earthquakes

Loss-Reduction Measures. Few homeowners have taken steps to reduce the losses from future earthquakes, even though the costs of many mitigation measures are relatively small and their expected benefits can be substantial. In a 1974 survey of more than 1,000 California homeowners in earthquake-prone areas, only 12 percent indicated that they had adopted any protective measures to reduce earthquake damage. Fifteen years later the situation had not changed, although seismologists had predicted a number of serious quakes and the media devoted considerable discussion about steps homeowners could take to reduce losses from a future earthquake.

In a 1989 survey of 3,500 homeowners in four California counties subject to earthquake damage, 5 to 9 percent of the respondents reported adopting measures to reduce losses. A follow-up survey of residents affected by the Loma Prieta earthquake revealed that few residents invested in any type of loss-reduction measures, and those who did made only minor changes, such as bolting furniture to walls and floors. The principal reason given for not adopting loss-reduction measures was that they were overly expensive relative to the expected benefits that could be gained from the investment. In some cases homeowners' calculations of benefits may have been based on very short time horizons so that some cost-effective measures would not be adopted.

To lessen the effect of a catastrophic earthquake residents and businesses can adopt mitigation measures to reduce property losses and purchase private insurance to reduce recovery costs.

To understand this point, consider the following example adapted from a study conducted at the Wharton Risk Management and Decision Processes Center for the Federal Emergency Management Agency. That study used data from a report by Gallagher Associates to the California Department of Insurance that concluded that over 25 percent of the dwellings built before 1940 moved from their foundations as a result of the 1983 Coalinga earthquake in central California. It costs between $1,000 and $2,000 to brace a one-story house so that it will not move from its concrete foundation. In return the homeowner can expect savings of between $25,000 and $30,000 if his house would otherwise have moved from its foundation as a result of a future earthquake.

Suppose that we use the midpoints of those two estimates—a cost of $1,500 and an expected benefit of $27,500—to evaluate the attractiveness of that loss-reduction measure. Suppose a family with a pre-1940 house estimates that if there is a recurrence of an earthquake as powerful as the Coalinga earthquake near its residence, there is a 25 percent chance that the house will move off its foundation. If the family believes that the annual chance of such an earthquake is one in twenty-five, then under the assumption that the quake occurs at the beginning of the year, the expected benefits from that loss-reduction measure will be $275 (.25 × .04 × $27,500). If one is short-sighted and only focuses on the expected benefit for the next year, then the $1,500 expense of bracing the foundation will not be justified in the homeowner's mind. Table 1 depicts the critical probability levels above which the family will want to invest in the $1,500 to brace its house. On the basis of a

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Table 1: Critical Annual Probability Level of Future Earthquake to Justify Bracing Pre-1940 One-Story House

Cost of Measure: $1,500

Benefit of Measure: $27,500

Chances of House's Being Damaged by Earthquake If It Occurs in Area: .25

Time Horizon in Years	Critical Probability of Future Earthquake
1	.218
2	.111
3	.076
4	.058
5	.047
10	.026
25	.014

one-year time horizon the only way that bracing the foundation would be attractive to the family is if it estimated the probability of a future earthquake to be greater than 218 in one thousand.

On the other hand, suppose one computes the expected benefits of bracing the foundation over a multiyear period. Then the annual probability of a future earthquake will be lower to justify investing funds in that loss-reduction measure. Suppose that one uses a 4 percent discount rate to compute the net present value. If the family expects to live in its house for at least ten years, then if the family perceives the annual probability to be twenty-six in one thousand or higher, it should want to adopt the loss-reduction measure.

Earthquake Insurance. Until very recently, few homeowners have had an interest in voluntarily purchasing earthquake insurance. In 1976 less than 5 percent of homeowners residing in California had bought coverage although it had been available since 1916. Two recent developments have stimulated the demand by homeowners for earthquake insurance today. At the beginning of 1985 a statute by the California state legislature went into effect that required insurance companies to inform all policyholders with homeowners' coverage that they could add the earthquake peril to their policy for an additional charge. In addition, there have been forecasts by seismologists that an earthquake of catastrophic proportion is likely to occur somewhere in California by the end of this century.

Most consumers view insurance as an investment so that they want to get something back in return for their premium. It is hard to convince individuals that the best return on a policy is no return at all.

Still only 20 percent of homeowners across California purchased earthquake insurance voluntarily in 1990. On the other hand, there are counties in the state where insurance demand today is relatively high. For example, in Santa Clara County, the area most directly rocked by the Loma Prieta earthquake, a 1991 survey of homeowners by Risa Palm and her colleagues at the University of Colorado revealed that 51 percent of the respondents had earthquake insurance—an increase of 11 percent over the number insured before the 1989 quake.

In other areas of the country, the demand for earthquake coverage has been considerably lower or nonexistent. In the region near the Missouri-Kentucky-Tennessee border where the New Madrid fault is located, there was little interest in earthquake insurance until Iben Browning predicted that a severe earthquake in New Madrid would occur in December 1990. His forecast created quite a sensation with the media since an 1812 earthquake in that area is still one of the most severe quakes in recorded history. Insurance companies, such as State Farm, reported a surge in demand for earthquake policies before the predicted date of the quake, but that demand decreased once 1990 passed. Nevertheless, most homeowners who purchased earthquake insurance as a result of their prediction have retained their coverage to date. If past experience is a guide, one may expect cancellations in future years if no earthquake occurs.

There are several reasons for the general lack of interest in earthquake coverage. In regions of the country that face earthquake risks but have experienced very little seismic activity, it is natural for residents to feel that an earthquake will not happen during their lifetime. They then worry about one less thing. In addition, it means that they do not have to think about expending funds for coverage where they perceive the chances of collecting on a policy to be very small. Most consumers view insurance as an *investment* so that they want to

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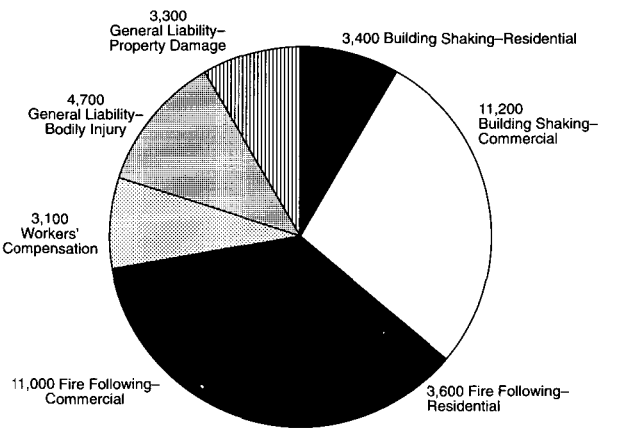
get something back in return for their premium. It is hard to convince individuals that the best return on a policy is no return at all.

For those homeowners who have evaluated the potential damage to their structure from a severe earthquake, some may feel that insurance is not a very good deal. For example, in California most residential dwellings are wood-frame structures, which are likely to suffer relatively minor losses from shaking. With the standard 10 percent deductible on an earthquake policy, those homeowners are unlikely to collect much, if anything, from earthquake coverage. Fire damage from an earthquake will be covered by a homeowners' policy, which financial institutions require as a condition for obtaining a mortgage. The fact that homeowners can collect on fire damage claims whether or not they have earthquake insurance is of additional concern to the insurance industry.

Figure 1: Estimated Total Insurance Industry Losses for a Recurrence of the 1906 San Francisco Earthquake ($ millions)



Insurance Industry Concerns Regarding Earthquake Losses

Insurance companies are not particularly worried about the long-run financial impact to them of earthquakes of moderate severity, even those of the magnitude of the 1989 Loma Prieta earthquake, where the direct insured losses were estimated at $902 million. Most companies have enough surplus on hand to cover losses from those disasters without adversely affecting their balance sheet.

Should a very severe earthquake occur in a populated area of California, the story is likely to be completely different. Consider a disaster of the same force (8.3 on the Richter scale) and geographic location as the 1906 San Francisco earthquake. Should such a quake occur tomorrow with similar secondary losses such as fire damage, the event will be classified as a catastrophic earthquake. Our analysis of a catastrophic earthquake will relate to that specific hypothetical quake.

The insured losses from such a catastrophic earthquake, which include shaking, fire, general liability, and workers' compensation, are estimated to be $40.3 billion. Figure 1 reveals that most of the insurance claims will be due to damage that has not been directly caused by structural shaking. More specifically, over $14 billion of losses will be due to fire following the earthquake, $3 billion for workers' compensation payments, and $8 billion for claims under general liability policies. Such indirect losses are covered by fire, workers' compensation, and liability policies and require dedicated earthquake coverage. Earthquake insurance policies cover shaking damage, but only $14.6 billion in claims would be due to the shaking of buildings. Thus, if there was no "shake damage" in force today, the insured losses from other policies—fire, workers' compensation, and general liability—would still be $25.7 billion.

Most insurance companies have enough surplus on hand to cover losses from earthquakes of moderate severity without adversely affecting their balance sheet.

The financial strength of insurers is measured by their surplus or equity. The surplus provides a safety net in case the aggregate losses from different policies turn out to be larger than expected. The total surplus of the insurance industry in 1990 was about $130 billion, significantly greater than the damage from the catastrophic earthquake described above. Hence, at an aggregate level, that damage does not appear to be crippling to the insurance industry.

Drawing such a conclusion from those data is somewhat risky and imprudent. For one thing, it assumes that the catastrophic earthquake does *not* coincide with other major catastrophes such as windstorms or hurricanes in the current time

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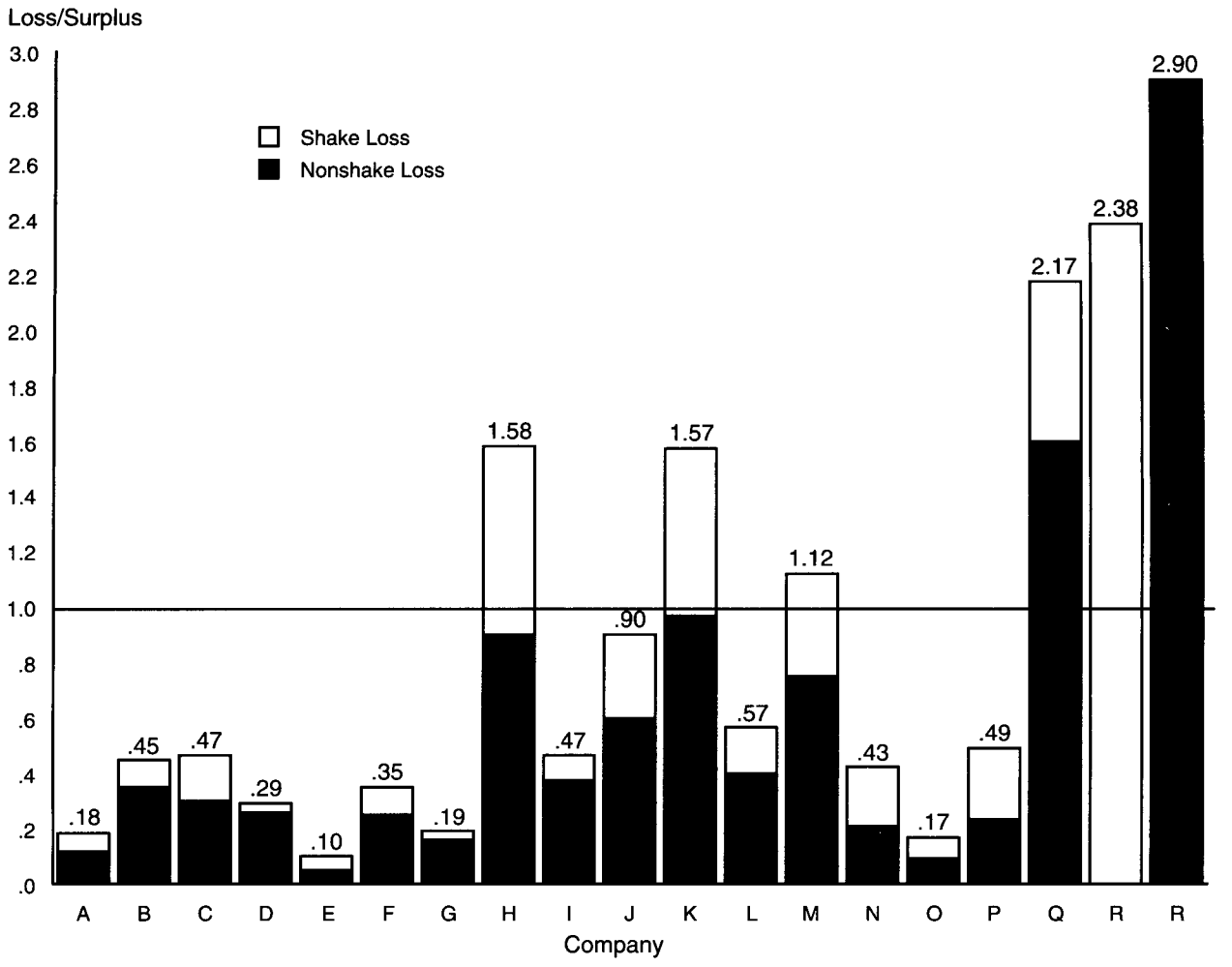
Figure 2: Shake and Nonshake Loss as a Percent of Surplus



frame. Even if there were no other abnormally large losses, the depletion of surplus will affect the ability of all insurers to write their current book of business, except for those who are able to raise new capital from the market—a process that takes time. Regulators are always concerned when a company's surplus is reduced and hence may require some insurers to cut back on the coverage they offer. That means that consumers and businesses will find it more difficult to purchase coverage that they now consider standard, or they will find that they have to pay much higher rates for identical coverage.

The financial strength of insurers is measured by their surplus or equity. The surplus provides a safety net in case the aggregate losses from different policies turn out to be larger than expected. The depletion of surplus will affect the ability of all insurers to write their current book of business.

The aggregate figure also does not reveal anything about the effect of a catastrophic earthquake on individual insurers. Some firms will be able to absorb their losses, while others will become insolvent. Our findings in another study of a sample of eighteen different sized insurers provide

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insight into those distributional effects. Seven of the insurers (labeled A through G) had a surplus at the end of 1990 that was greater than $2 billion, five (labeled H through L) had a surplus between $1 billion and $2 billion, and six (labeled M through R) had a surplus less than $1 billion. Those companies accounted for 36 percent of the total surplus of the insurance industry and 41 percent of the total net premiums written.

As a first cut in our analysis, we used public information from A.M. Best Co. to estimate how much each insurer in the sample would be obligated to pay on policies sold directly to individuals and firms who suffered damage from a catastrophic earthquake. Our analysis *excluded* any consideration of reinsurance policies bought from or sold to other firms. Figure 2 depicts the amount of insured shake and nonshake losses from a catastrophic earthquake for the eighteen firms in the sample. All of the firms had losses before reinsurance that were greater than 10 percent of their surplus. Such a situation would be a cause of regulatory concern to the California Department of Insurance.

None of the seven largest firms would be insolvent from a catastrophic earthquake, but five of the eleven smaller firms would suffer losses greater than their surplus. Unless their reinsurance could cover enough of those losses, those firms would be declared insolvent. Even if they had not sold a single earthquake insurance policy, two of the firms (Q and R) would still be insolvent owing to their *nonshake* losses, and two others (H and K) would be on the verge of insolvency.

All primary insurers use the reinsurance market to protect themselves against the possibility of a catastrophic loss from events such as a catastrophic earthquake. A reinsurer effectively buys a portion of the claim should such an event occur. A reinsurance program may provide an insurer with a layer of protection of between $50 million and $150 million for losses from a single catastrophe. That means that the primary insurer would cover the first $50 million in claims and that the reinsurer would cover the next $100 million. If total insured losses were above $150 million, the primary insurer would absorb the additional amounts unless another layer of reinsurance was purchased.

Data on reinsurance in force for insurers is not in the public domain, except in aggregate form. Therefore, we distributed a questionnaire to the eighteen firms in the sample to determine the amount of catastrophe reinsurance in force. Fourteen companies responded to the survey. Although that sample is relatively small, the data paint a consistent picture across all fourteen insurers: private reinsurance will not significantly change the story from the one described above. We show that in Figure 3. Three (H, M, and R) of the five firms that we predicted would be insolvent from a catastrophic earthquake responded to the survey; all of them would still be in the same unenviable position, even if the reinsurers paid all their claims.

Today reinsurers show little interest in offering more protection against natural hazards such as earthquakes simply because they believe that the premium they feel they can justify will expose them to excessive risk.

Private reinsurers face the same problem that the primary insurers do when it comes to a catastrophic earthquake. They know that in the case of such an event they will be required to make full payment on their reinsurance coverage. In the example presented above, the reinsurer is likely to pay $100 million to the private insurer simply because the earthquake damage is large. The premium that reinsurers believe they can charge for such coverage will likely be relatively small since the event has such a low probability of occurring.

Today reinsurers show little interest in offering more protection against natural hazards such as earthquakes simply because they believe that the premium they feel they can justify will expose them to excessive risk. They prefer not to provide coverage at an exorbitantly high premium but would rather indicate that they do not have enough capacity to provide any additional protection against earthquakes.

A Proposed Program

The empirical data on the attitudes of homeowners and insurers toward earthquake losses presents an interesting contrast. While homeowners prefer not to think about the consequences of a severe earthquake to themselves and their property, insurers are focusing their attention on the

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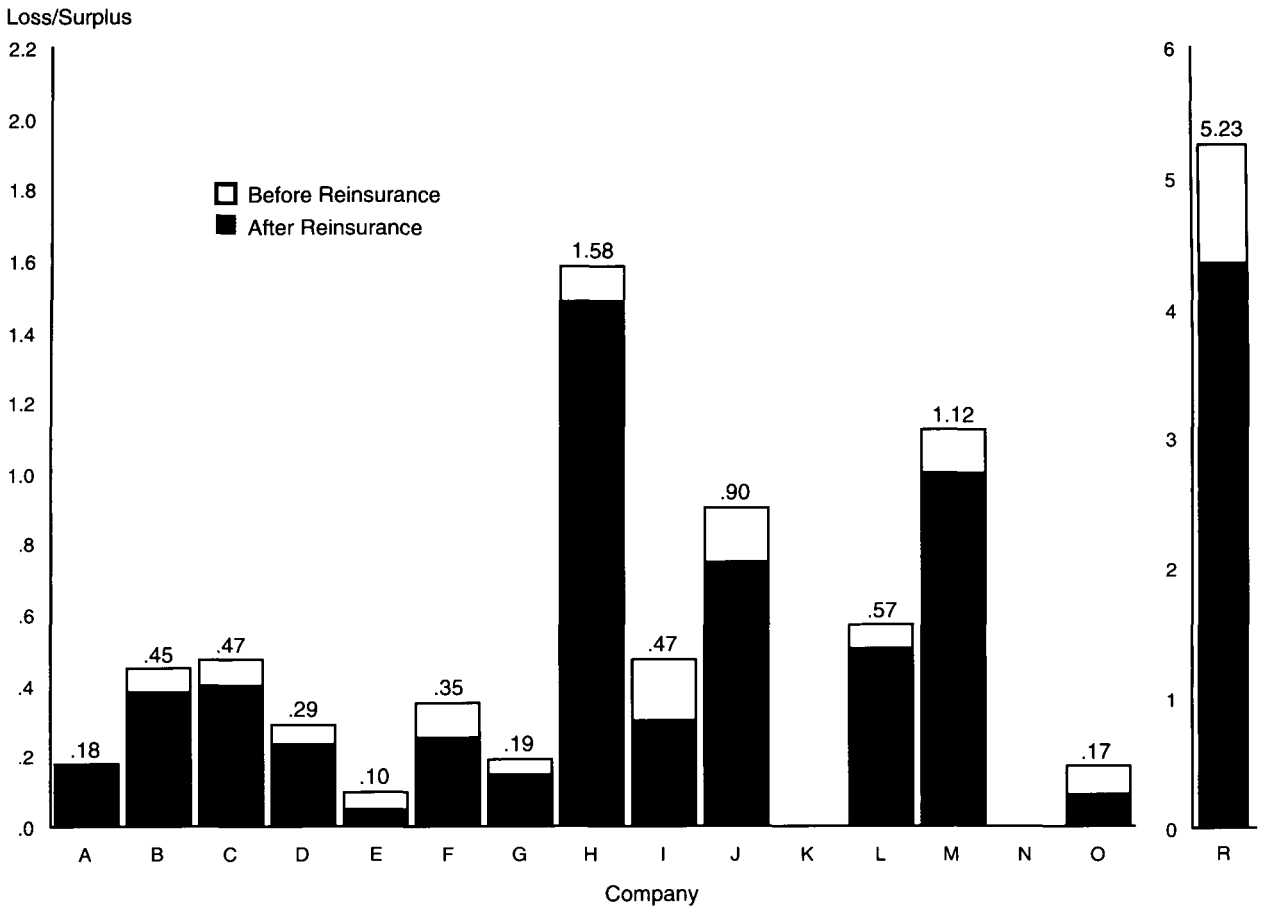
Figure 3: Loss as a Percent of Surplus before and after Reinsurance



Note: Companies K, N, P, and Q did not report their catastrophe reinsurance in force.

potentially catastrophic losses that may lead to insolvency. Neither side wants to deal with the hazard for entirely different reasons.

Banks and financial institutions should have an interest in requiring mitigation measures and earthquake insurance, but to date they have not mandated those protective measures as a condition for a mortgage. Each bank may fear that if it imposes those restrictions, the homeowner will seek a loan elsewhere. In such a case it may be advantageous for all banks to be required to have an appropriate building code on all their mortgages. Otherwise, no individual bank will adopt that requirement for fear that the competition will not.

Need for Building Codes. Building codes for loss-reduction measures that pass an expected benefit-cost test are desirable for both new and existing structures. The liberal federal assistance to disaster victims and the possible bankruptcy of businesses and homeowners impose costs on the general taxpayer that can be reduced by adopting building codes. A study by Robert Litan and Fred Krimgold details the types of building codes for specific structures that can be justified when one makes a conservative estimate of the expected benefits from reductions in property damage.

Linda Cohen and Roger Noll advanced an additional rationale for building codes. The structural soundness of a building may have social value over and above its economic value. Should a set of buildings collapse in an earthquake, it may create economic dislocations and other social costs over and above the replacement value of the buildings. Those will not be taken into account when the owners decide whether to improve the structure.

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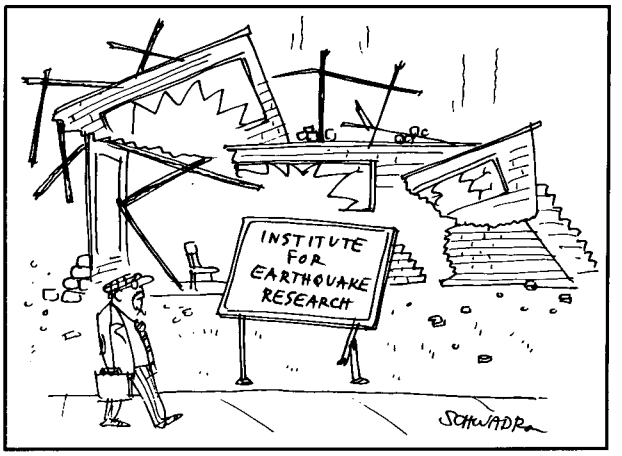
Of course, there are a set of equity questions as to who should pay for improvements in structures, particularly existing ones. Most of the poorly constructed buildings are owned by low-income families, who are least able to afford those additional expenses. Low-interest loans or special subsidies to those groups may be necessary to enable them to fortify their structures. With respect to new construction, the developer and the contractor will decide on designing building structures to meet the code, and their decision will be reflected in the price of the structure.

Advantages of Required Insurance. Currently homeowners, private insurers, and financial institutions do not enthusiastically promote earthquake coverage on residential structures. While an insurer may not view the offering of earthquake coverage to a business as an attractive investment, most businesses desiring this protection are able to obtain it as part of their entire insurance package.

While we recognize that many mitigation measures may not be cost-effective, insurance can have an important role to play in encouraging contractors and homeowners to adopt mitigation measures that have positive net benefits and are not included in existing building codes. If premiums are based on risk, then those who adopt such measures can be charged lower premiums. If the premium reduction is large enough, it should encourage homeowners to adopt the measure. If the premium reduction is relatively small, then homeowners may not find that benefit to be very attractive for the same reason that they did not want to invest in the mitigation measure in the first place—myopic behavior. The large up-front cost looms much larger than the cumulative premium reductions over a period of years.

One way to counteract that effect is for the state or federal government agency to provide homeowners with long-term loans for mitigation. Loan repayments would coincide in timing with insurance premiums. If the benefits of the loss-reduction measure are great enough, the loan repayments will be more than counteracted by lower insurance premiums. California took steps in that direction when it created the Residential Earthquake Recovery Fund, which became effective in January 1992. Each of the 6.5 million residential policies and 500,000 mobile home policies



have a surcharge of between $12 and $60 imposed to cover possible damage of up to $15,000 to the structure from a future earthquake. First reports from insurance companies indicate that 85 percent of customers are paying surcharges. Mitigation will be encouraged through low-interest loans and reduced surcharges to properties that are retrofitted to withstand earthquake damage.

If victims of an earthquake are protected by insurance, that obviates the political pressure for liberal assistance following a disaster.

From the insurance industry's vantage point, there is a great advantage in requiring all homeowners to purchase earthquake insurance. Such a measure diversifies the risk so that there will be a larger premium base to cover the losses from a particular disaster. If rates are not set carefully to reflect risks, however, policyholders may feel as if they are paying a "tax" rather than a premium.

In addition, the insurance industry would be able to set rates on the earthquake coverage to reflect their hidden losses after an earthquake from causes such as fire and general liability. Those exposures are difficult to rate for the earthquake risk. Japan has addressed that problem by having insurers pay for shake and nonshake losses only if the policyholders have earthquake coverage. It is highly unlikely that private insurers in the United States would be encouraged or allowed to imitate the Japanese earthquake insurance policy by eliminating those hidden exposures from their existing coverage.

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If victims of an earthquake are protected by insurance, that also obviates the political pressure for liberal assistance following a disaster. The prospect of disaster relief not only discourages loss-reduction measures, but also raises questions of equity. Should the victims or the general taxpayer pay for disaster losses? Disaster relief also increases the possibility of fraud, since funds might be used for nondisaster expenses. The San Fernando earthquake of 1971 is a case in point. At that time the federal government provided relief through the Small Business Administration and offered a forgiveness grant as part of its policy to aid victims. In effect, an individual could borrow $3,000 but had to repay only $500 at a 3 percent annual rate so that the general taxpayer helped subsidize recovery. A survey by the *Los Angeles Times* revealed that many homeowners were given funds to repair damage *not* caused by the earthquake, did their own work even though their loans were based on a contractor's doing it, and frequently received more money than they needed for repairs.

The Case for Federal Involvement. Given the inability of private reinsurers to provide sufficient protection against losses from a catastrophic earthquake, we propose the creation of a federal reinsurance agency. In other words, the federal government would act as a reinsurer of last resort. Private insurers would pay premiums to the agency in return for protection of losses over and above a certain magnitude, just as they would to a private reinsurer.

Given the inability of private reinsurers to provide sufficient protection against losses from a catastrophic quake, we propose the creation of a federal reinsurance agency.

If there is no severe earthquake over the next few years, the agency would build up a base of reserves to cover future losses. If a catastrophic earthquake were to occur next year, the agency would have to be authorized to cover those losses even though the premiums they would have received fell short of their claims. That is what insurance and reinsurance are all about. A related proposal has been advocated by the Earthquake Project, a consortium of private insurance companies. It has proposed a federal insurance and reinsurance program for catastrophic losses that requires the insurance industry to pay back any excess of losses over premium.

Since the federal government would be officially involved with earthquake disasters, it should be able to avoid the large amounts of disaster assistance that it has previously provided. The government would have the authority to require earthquake insurance on all federally insured mortgages, a step that might encourage other financial institutions to follow suit on their private loans. In addition, it could withhold funds and disaster assistance from earthquake-prone communities unless they instituted specific building codes and regulations for both public facilities and private structures. The National Flood Insurance Program set a precedent for that type of federal involvement when legislation was passed in 1973 that specified those type of sanctions.

In summary, we advocate a combination of incentives, insurance requirements through financial institutions, and building code standards with federal reinsurance coverage for catastrophic earthquakes. Such a program promises to reduce private and social costs from future disasters and to make for a more efficient and equitable recovery process after the next earthquake occurs.

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Insurance Price Controls, "Affordability," and Taxation by Regulation

Benjamin Zycher

Kangaroo courts. A presumption of guilt before innocence. Sentence, then verdict, then trial. Irrelevance of exculpatory evidence. Dishonesty by prosecution witnesses. Rewriting of rules to deny due process. Consistent violation of procedural safeguards.

No, I am not talking about Iraq. As insurance rate regulation increasingly is seen and treated as a struggle among interest groups for shares of a pie allocated by regulator-politicians, those manifestations of regulatory dishonesty inexorably will become the rules of the game known as insurance rate regulation in many U.S. states. More specifically, regulation of insurance rates, traditionally aimed at preserving insurer solvency and "fairness" in the rate structure—that is, efficiency, defined as rates reflecting expected losses for given consumers and consumer classes—increasingly has been transformed into a system designed to guarantee "affordability." What that means in practice—indeed, it cannot mean anything else—is regulators' imposing binding price controls on insurance services experiencing rapid increases in costs. That in industry parlance is the growing phenomenon known as "rate suppression" and is particularly acute in property-casualty and workers' compensation insurance.

Because regulation of insurance rates is becoming politicized, which is to say, subjected to fierce interest group competition, wealth redistribution will come to hold center stage among the various regulatory goals. Again, that means, as day follows night, that the imposition of binding price controls on insurance, with all of their attendant effects, both inevitable and perverse, is the wave of the future. That is the fundamental implication of the substitution of "affordability" for solvency and efficiency considerations in the regulatory approval of rates, combined with the increasingly short time horizons of regulators.

Benjamin Zycher is Vice President for Research at the Milken Institute for Job and Capital Formation.

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Two central realities link the "affordability" end with the price control means. First, rate regulation by state officials can do nothing about the inexorable rise in underlying costs, as the cost increases afflict medical care and other sectors highly complementary with the provision of insurance services. As even the federal government almost never is capable of restraining input costs important for given goods and services sectors, only insurance rates themselves, from the viewpoint of state regulators, are subject to direct influence. Second, the "affordability" goal, when translated by political behavior into actual rules and policies, inexorably is transformed into a wealth redistribution mechanism. Since regulators have neither the power to tax (explicitly) nor the power of the purse, the redistribution goal evolves quickly into a system of implicit subsidies, under which some rates are maintained at levels that are artificially high so that others can be held down.

Market Incentives for Low Solvency Risk

Such a system of implicit subsidies is viable only in the short run because the highly competitive nature of insurance markets means that the higher rates on some services needed to support the subsidized rates on others will tend to be competed down by rivals. But if the regulated system of implicit subsidies is not viable, then the wealth redistribution itself cannot be maintained without a steady erosion of insurer solvency, an issue to which I return below. For now, it is useful to review the historical record on insurer insolvencies, as well as the market forces that provide incentives for a high degree of reliability.

Regulation of insurance rates, traditionally aimed at preserving insurer solvency and "fairness" in rate structure, increasingly has been transformed into a system designed to guarantee "affordability."

The growing clamor over the insolvency problem in the insurance industry has obscured the relatively small magnitude of the problem. By the mid-1980s there were about 3,600 property-casualty insurance companies in the United States; an annual average of six property-casualty insurance failures requiring guaranty fund assessments occurred in the 1970s, of which a third took place in 1975. The annual insolvency rate from 1984 to 1989 was considerably higher than the historical experience, but still was always lower than 1 percent of all insurers. Attendant upon that change was a sharp increase in net assessments by guaranty funds during the 1980s, but total assessments remained below .005 percent of total premiums every year. Among life and health insurers, an average of eleven failed in interstate operations from 1985 to 1989, but the average guaranty fund assessment during the 1980s was only .05 percent of total premiums. And almost half of the life and health insolvencies occurred in 1989, which suggests that the central causes were sharply rising health care costs and profitability problems afflicting life insurance contracts with payments sensitive to changes in interest rates.

Popular assertions about fraud, mismanagement, and weak regulation explain neither the low absolute number of insurance insolvencies over time nor the sharp relative growth of insolvencies in the 1980s. Insurers face investment risks associated with shifts in interest rates, as well as underwriting risks associated with the size of future claim costs. The unexpected growth in liability claim costs for policies sold during the early 1980s is an obvious source of the increase in insolvencies observed during the 1984 to 1989 period, the period of the liability insurance crisis. Such increases in liability coverage costs are obvious after the fact but present enormous problems for both insurers and regulators in the measurement of "adequate" loss reserves before the fact. In short, the popular "fraud, mismanagement, and weak regulation" rationalization for recent experience is overly simplified, particularly since mistakes are a good deal easier to identify after the fact than before.

The small number of insolvencies to be found historically and the rather shallow nature of the "fraud, mismanagement, and weak regulation" rationale raise an interesting issue. Why is the insurance industry so reliable? Executives and shareholders of insurance companies may be altruistic in the extreme, but it is unnecessary to adopt that view to see that market forces make such reliability profitable. Since consumers are willing to pay for a high degree of reliability—which is very different from perfection—the profit motive leads firms to provide the amount of reliability for which consumers are willing to pay and

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to use market institutions as means of implicitly informing and assuring consumers about that reliability.

Foremost among the subtle market forces promoting reliability and thus reducing the probability of insolvency is the price of insurance itself. In such markets as that for insurance services, in which repeat business is important, market price is driven up to reflect the costs imposed upon producers by honest dealing and by a continuing effort to supply the reliability level consumers demand. Since fraudulent behavior might be profitable in the short term, one of those costs, ironically enough, is the gain forgone because of a refusal to deal fraudulently. Analytically, the increase in the price of insurance yielded by market forces is a stream of payments or rewards from consumers for reliable (or honest) behavior, the present value of which is bid up in competitive markets to exceed the prospective gains to be had through a failure to honor reliability commitments. Thus, is it literally true that the market price itself, quite apart from its role in terms of direct resource allocation, is a market guarantee of quality, because profit-maximizing firms recognize that the stream of reliability payments is more valuable than the one-time gain from cheating. From the viewpoint of consumers, the upward shift in price is a signal that the firm will earn greater total returns from honest dealing than from fraud. Thus do consumers typically become suspicious about prices that are "too good to be true." Indeed, they usually are. Therefore, market behavior is consistent with that insight, although consumers do not literally perform such a calculation.

Similarly, advertising provides profitability incentives to supply the efficient amount of reliability. Certainly, firms advertise to make the availability and the characteristics of their products more widely known. More subtly, firms advertise to signal to consumers that their services will be reliable and that their promises will be honored. Expenditures on advertising build up what can be termed "brand name (or advertising) capital," which earns returns for the firm as long as it honors its commitments. Brand name capital is thus analogous to a surety bond: if the firm begins to cheat its customers, they will go elsewhere and the firm will lose the returns on and thus the economic value of its investment in brand name capital. In short, the very fact that the firm invests in advertising—quite apart from the specific content of the

advertisements themselves—signals to consumers that the firm will earn greater total returns by dealing honestly than by cheating. Thus, for goods

Agents and brokers have incentives to deal with "safe" insurers to avoid future losses of business caused by erosion of consumer confidence in the wake of an insurer's insolvency.

the quality of which is difficult to measure before purchase, consumers trust brand names that they recognize and pay higher market prices for those products than for others. Indeed, consider an individual on a street corner who is trying to sell a can that he claims contains some tasty fruit. If he has no specialized investment that he would lose were his claim to prove fraudulent, the market will offer him a price of zero for the can. In plain language no one will trust him. The very fact, then, that a good is advertised signals that the good is worth advertising.

Other market institutions provide additional incentives for providing the efficient level of reliability. Agents and brokers have incentives to identify and deal with "safe" insurers to avoid future losses of business caused by erosion of consumer

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confidence in the wake of an insurer's insolvency. Second-party demanders of insurance services such as banks have powerful incentives to monitor insurer solvency. And insurers with sizeable investments in such intangible capital assets as sales forces have important incentives to avoid bankruptcy.

Insolvency Risk under Insurance Price Controls

As an aside, the inherent efficiency of the insurance market is eroded by government guaranty funds, designed to honor policyholder claims in the event of an insurer's insolvency. The guaranty fund system reduces incentives for consumers to search for reliable (that is, safe) insurers and so imposes penalties upon insurers that make their promises to honor claims more credible by enlarging their capital structures to reduce solvency risk. Larger capital structures, after all, are not free. And agents and brokers in the absence of the guaranty fund system would have stronger incentives to identify and deal with safer insurers. In short, the guaranty funds offer the insurance system incentives to reduce the reliability of insurance services, even as they allow risky insurers to undercut the prices of their competitors.

Potentially far more important than guaranty funds in terms of insolvency risk is the prospective effect of rate suppression or price controls on insurance.

Potentially far more important in terms of insolvency risk is the prospective effect of rate suppression or price controls on insurance. Consider an insurer beginning in its first year with a capital structure or "surplus" used to underwrite insurance commitments of $1 billion. Total earned premiums, including (expected) income from investment of premiums, are, say, $2 billion; but operating costs (or the "operating ratio") are $2.1 billion, or 105 percent of total premiums, themselves "suppressed" by price controls. Thus, there is an operating loss of $100 million; if income derived—or, more accurately, that is expected to be derived—from investment of the surplus is smaller than the operating loss, then the insurer's "surplus" or capital base must shrink. Table 1 presents a heuristic example.

Table 1: Progressive Erosion of Capital under Rate Suppression (billions of dollars)

Year	Starting Surplus	Earned Premium	Operating Costs	Operating Loss	Income from Surplus	Ending Surplus
1	1.0	2.0	2.1	.1	.07	.97
2	.97	2.2	2.31	.11	.068	.928
3	.928	2.42	2.541	.121	.065	.872
4	.872	2.66	2.80	.14	.061	.793

Even if income from investment of the capital base exceeds the operating loss, the net economic return to the capital base will be below normal on average; the capital market over time will shift the resources to uses not subject to the implicit tax regulators impose in the form of price controls yielding operating losses.

Table 2 shows for the U.S. property-casualty insurance sector total cost to premiums ratios, the real accounting rate of return to net worth, and total insolvencies for 1975 through 1991. What is striking about those data is the upward trend in the number of insolvencies in the 1980s, which are strongly correlated with the persistence of cost-premiums ratios well above one.

Table 2: Cost-Premiums Ratios, Returns to Net Worth, and Insolvencies

Year	Cost-Premiums	Rate of Return	Insolvencies
1975	1.08	−6.8	28
1976	1.02	3.2	8
1977	.97	12.7	9
1978	.98	10.4	7
1979	1.01	6.1	10
1980	1.03	1.2	5
1981	1.05	3.0	9
1982	1.10	3.1	8
1983	1.12	5.9	11
1984	1.17	−2.6	26
1985	1.16	−.8	49
1986	1.08	12.0	25
1987	1.04	9.6	19
1988	1.04	9.1	35
1989	1.08	4.3	39
1990	1.09	3.0	31
1991	1.08	n.a.	41

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Table 3: Kramer Study Rate Suppression States

Private Automobile Insurance	Workers' Compensation Coverage	
Delaware	Alabama	New Hampshire
District of Columbia	Arkansas	New Mexico
Louisiana	Florida	North Carolina
Massachusetts	Georgia	Oregon
Nevada	Iowa	Pennsylvania
New Hampshire	Kansas	Rhode Island
New Jersey	Kentucky	South Carolina
Pennsylvania	Louisiana	South Dakota
Rhode Island	Maine	Tennessee
South Carolina	Massachusetts	Texas
Texas	Mississippi	Vermont
	Missouri	Virginia
	Nebraska	

Cost-premiums ratios are affected by a number of factors, only one of which is the stringency of price controls in states where given firms do business. Individual insurers do business in many or all states, and so the effects of price controls in one or some states tend to be obscured by overall business results for a given firm. In a study done for the Insurance Information Institute, Orin S. Kramer applies three criteria to state insurance markets and regulation and thus delineates "rate suppression" and "nonrate suppression" states for private automobile insurance and for workers' compensation coverage. Table 3 lists those states.

Kramer notes that while about 87 percent of the property-casualty industry writes some amount of business in states imposing effective price controls, less than 6 percent of the industry writes 35 percent or more of its business in states imposing effective price controls. That suggests that in the short run the price control problem will significantly affect the solvency positions of only a limited number of firms. On the margin, however, price controls are likely to increase the number of insurer insolvencies, and that effect is likely to grow over time. That inference is supported by data on percentages of all insurers, "nonweak" insurers, and insolvent insurers writing various proportions of their business in states Kramer classifies as "rate suppression" (or price control) states. Table 4 shows, for example, that insurers as a whole earned 15.6 percent of their premiums in rate suppression states, and 21.8 percent of all insurers earned more than 10 percent but not more than 15 percent of their premiums in rate suppression states. Among nonweak firms, 19.9 percent earned more than 10 percent, but not more than 15 percent, of their premiums in states imposing effective price controls, while 29.4 percent of insolvent insurers did the same.

Ironically, the relatively small proportions of insurers earning large parts of their total premiums in price control states may tend over time to exacerbate the problem. To the extent that state regulators wish for whatever reasons to avoid driving insurers into insolvency, a standard free-rider problem is created when a given insurer does a small part of its total business in a state. From the viewpoint of the regulators in that state, their suppression of rates would not have much impact on a firm's overall solvency position, and they are likely to wait for regulators in other states to improve the financial condition of the firm by allowing rates to reflect costs more completely.

Price controls on insurance inexorably will erode service quality, as insurers reduce the speed of reimbursement and increase the scrutiny with which they examine claims.

Conclusions

Price controls on insurance inexorably will erode service quality, as insurers reduce the speed of reimbursement and increase the scrutiny with

Table 4: Percentages of Premiums Earned under Effective Price Controls

Percent of Insurers Earning X Percent of Total Premiums under Price Controls	All Insurers (1989)	Nonweak Insurers (1989)	Insolvent Insurers (1982–1987)
> 10 Percent	21.8	19.9	29.4
> 15 Percent	17.2	15.6	23.5
> 20 Percent	13.9	12.9	20.6
> 25 Percent	11.3	10.6	22.0
> 30 Percent	9.8	8.9	18.6
Percent of Total Premiums from Price-Control States	15.6	13.8	22.0

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which they examine claims. Greater insolvency risk reduces the quality of insurance services, as the probability rises that insurance commitments will be vitiated by insolvencies. Moreover, insurers invest in a capital base to protect the value of such other investments as sales forces and brand name capital; the value of those kinds of intangible assets to both the firm and consumers would be eroded dramatically in the event of an insolvency.

The implicit subsidies engendered by price controls tend overwhelmingly to subsidize high-risk consumers of insurance at the expense of low-risk consumers. That reduces incentives to invest in safety mechanisms and thus increases accident costs over time. And price controls do nothing about underlying increases in the cost of providing insurance services.

To the extent that insurance rates are influenced by political pressures rather than by market forces, they will serve not as signals of consumer preferences and resource costs, but instead as tools with which to subsidize particular interest groups at the expense of others.

Politics is the art of wealth redistribution. To the extent that insurance rates are influenced by political pressures rather than by market forces, they will serve not as signals of consumer preferences and resource costs, but instead as tools with which to subsidize particular interest groups at the expense of others. Such wealth redistribution is part of a larger problem inherent in the behavior of democratic institutions: majority coalitions have incentives to transfer wealth to themselves at the expense of political minorities, as long as the adverse incentive effects of doing so—that is, the resulting impacts on work, saving, productivity, and resource waste in investments made to influence political outcomes—do not outweigh the direct benefits to members of the majority. It is no secret that insurance companies are a political minority par excellence, an unenviable position exacerbated in recent times by dramatic growth in the costs and thus rates for insurance services.

And the growing politicization of rates means that the politically ambitious increasingly will be drawn toward insurance rate regulation as a stepping stone upward. But ambition for higher office necessarily means a shortened time horizon with respect to the office held currently. Since the adverse solvency implications of artificially low rates are likely to follow rate decisions with a lag, current regulators do not bear all or even most of the political costs of rate decisions—and resulting solvency problems—inspired by political considerations.

Again, as insurance rates rise in real terms—driven largely by cost growth—political pressures for politicization of rates will grow as well. And as the flexibility of government budgets declines in the face of growing demands for both government spending and tax relief, regulation inevitably will be seen by state legislatures as a tool with which to subsidize favored groups outside the formal limits of government budgets. In my view the short-term outlook for rationality in insurance rate regulation is not salutary, but it is possible that a slow increase in the insolvency problem will constitute the two-by-four that gets the mule's attention.

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The Dutch Disease

Lessons for U.S. Disability Policy

Leo Aarts, Richard V. Burkhauser, and Philip de Jong

An epidemic of dangerous proportion gripped Western industrialized countries in the 1970s. While its symptoms were the same across countries, the curatives used were substantially different, especially in the United States, and have had very mixed results over the past decade. The epidemic is labelled disability. Here we unfold a cautionary tale on the limits of good intentions by contrasting the rise and fall of disability populations in the Netherlands, the United States, Sweden, and Germany over the past two decades.

A Cross-National Comparison of Disability Incidence

As recently as 1970, the ratio of disability transfer recipients to workers in the Netherlands was similar to that in Sweden and Germany. In all three countries there were only about fifty people of working age—fifteen to sixty-four years old—receiving payments from the government to offset lost wages due to a health condition for every 1,000 workers in that age group. That modest rate was, nevertheless, about twice that in the United States (see Table 1).

Leo Aarts is a member of the law faculty at Leiden University. Richard V. Burkhauser is a professor of economics at Syracuse University. Philip de Jong is a member of the law faculty at Leiden University.

Over the next decade the incidence of disability grew significantly in each of those countries but exploded in the Netherlands. Where once only fourteen younger persons (aged fifteen to forty-four) received disability transfers in the Netherlands for every 1,000 young workers, there were forty-nine in 1980, an increase of 250 percent.

Of course, as we grow older, we are more likely to suffer ill-health, so the ratio of disability transfer recipients to workers increases with age. In the Netherlands in 1970 over 100 middle-aged persons (aged forty-five to fifty-nine) were receiving disability benefits for every 1,000 middle-aged workers, and the ratio for older working age persons (aged sixty to sixty-four) was about 300 per 1,000. But by 1980 the ratio for the middle-aged population was nearly as high as that of the older population at the start of the decade—269 per 1,000. And by 1980 in the older working population there were almost as many persons receiving disability transfers as there were working! That explosive growth in Dutch disability incidence slowed substantially in the 1980s. But it was still at a record high of 139 per 1,000 workers in 1989, and among older workers disability transfer recipients outnumbered workers almost two to one.

What plague so debilitated the Dutch work force in the 1970s? What slowed its pace in the 1980s? And, was this a worldwide phenomenon or one endemic to the Netherlands? Table 1 begins to answer those questions. Sweden, Germany, and even the United States experienced substantial

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Table 1: Disability Transfer Recipients per Thousand Active Labor Force Participants, 1970–1989

Population	1970	1975	1980	Percent Change 1970s	1985	1989[a]	Percent Change 1980s
Aged 15–64							
Netherlands	49	77	126	157	130	139	10
United States	27	42	41	52	51	43	5
Sweden	49	67	68	39	74	78	15
Germany	51	54	59	16	72	55	−7
Aged 15–44							
Netherlands	14	28	49	250	50	53	8
United States	11	17	16	45	20	23	44
Sweden	18	20	19	6	20	21	11
Germany	7	6	7	0	8	5	−29
Aged 45–59							
Netherlands	102	164	269	164	279	317	18
United States	33	68	83	152	71	72	−13
Sweden	66	95	99	50	108	116	17
Germany	75	64	84	12	103	75	−11
Aged 60–64							
Netherlands	274	410	989	261	1,249	1,932	95
United States	154	265	285	85	254	250	−12
Sweden	229	382	382	67	512	577	51
Germany	419	688	1,348	222	1,291	1,109	−18

[a]The numbers for the Netherlands refer to 1990.

increases in their disability transfer populations in the 1970s. But in the United States after a rise in the first part of the decade, disability transfer rates steadied at around forty per 1,000, well below the European rates at the start of the decade. Growth in Germany has been even more modest. After rising to a high of seventy-two per 1,000 in 1985, it is back to 1970s' levels. Sweden's rates have risen modestly over the past two decades but are still around one-half those of the Netherlands. In both Germany and Sweden there has been almost no growth in the disability transfer rates of younger workers. The virulent strain of disability appears endemic to the Netherlands.

The root cause of the increased disability over the past two decades had to do more with the medicine countries provided their health-impaired workers than with any change in the underlying health of their citizens.

Table 1 suggests that the Netherlands and to a lesser extent the other countries experienced a health-related phenomenon that affected the work of an alarming number of their citizens. But we shall suggest that the root cause of the increased incidence of disability over the past two decades had to do more with the medicine those countries provided their health-impaired workers than with any change in the underlying health of their citizens. Hence, the cure lay more in the realm of social policy than medical policy.

Disability Labelling

To be labelled disabled, one must have some health condition that limits the ability to work. But disability also has a social context. Work limitations can be offset by either job changes or changes in some of the activities of the job one held at the time of onset of the work limitation. Burkhauser and Kim show that accommodation of that sort by private employers in the United States significantly lengthened the time until their work-impaired employees left the firm.

Alternatively, rehabilitation therapy together with government-sponsored transition jobs can help overcome work limitations. But social policy can also discourage work and accelerate the disability process. By cushioning the blow of poor

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health, transfer benefits may also provide a comfortable alternative to work. But that kind of medicine has a potentially dangerous side-effect. It can encourage the worker to lose the determination to overcome a health impairment and continue working. And as with all medicine, an overdose acts as a poison.

To understand the process to disability one must know not only the medical but the social context in which that process unfolds. In general, disabled workers were able-bodied for most of their work life. Thus, for most such workers, the transition from able-bodied to disabled begins with a health impairment that restricts to some degree their ability to work on a job they hold. At that point, the movement to disability is significantly affected by the options such workers have. The greater the share of wage earnings the disability system replaces and the higher the probability that the worker will meet the criteria for those benefits, the faster the transition will take place.

The employer's behavior also effects that decision. Health impairments can affect productivity on the job, and unless accommodations are made, that can result in pressure on the worker to leave. In addition, general economic conditions can lead employers and union officials to encourage health-impaired workers to leave when layoffs are necessary. Such is the case particularly when workers are near retirement age. Government policy also plays an important role in the decision that goes beyond the level and ease of accessibility to benefits. Health-impaired workers are also more likely to apply for disability benefits rather than unemployment or retirement benefits when disability benefits are more generous or longer-lasting than those alternative methods of protecting workers. And as we shall see in the case of the Netherlands, general labor market policy and the willingness of government to maintain a high wage policy at the expense of high employment may ultimately have more to do with determining the employment of health-impaired workers than specific disability rules.

When policymakers ignore the social aspects of the process to disability, a policy-inspired disability epidemic is possible. Public policy in the Netherlands in the 1970s allowed everyone to be comfortable in the face of illness and hence to ignore its consequences. It was comfortable for the worker who received the benefit, comfortable for the employer who no longer had to take responsibility for accommodating the worker, comfortable for the worker's union that saw disability benefits as a way of not only protecting a fellow worker but also perhaps opening a new position for an unemployed union member, and even comfortable for the government if the official unemployment rate was thereby reduced. Eventually, the enormous social burden of the disability policy was recognized but has not been easily corrected.

The greater the share of wage earnings the disability system replaces and the higher the probability that the worker will meet the criteria for those benefits, the faster the transition from able-bodied to disabled will take place.

The Evolution of Disability Transfer Programs

The substantial movement in the incidence of disability transfer populations over time and across countries cannot be explained by shifts in or differences across countries in underlying health conditions. To understand those movements it is necessary to understand the disability policies that caused them. Table 2 contrasts the growth in the major disability transfer programs of the Netherlands, the United States, Sweden, and Germany over the past two decades.

The Netherlands. The first level of protection against income loss in the Dutch system is the sickness benefit. That payment replaces 70 percent of wages for up to one year, but most employees (90 percent) and all civil servants have the rest of net of tax earnings replaced by collective bargaining agreements with their employers. Employees who are still receiving those benefits after one year are evaluated to estimate their residual earnings capacity. If they have a chronic condition that causes a reduction in their capacity to perform work commensurate with their job training and work history, they are eligible for disability benefits. Those who are judged partially disabled are eligible for partial benefits; the minimum degree of impairment for eligibility is 15 percent.

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Table 2: Disability Transfer Growth, 1970–1989 (thousands)

	1970	1975	1980	Percent Change 1970s	1985	1989	Percent Change 1980s
The Netherlands							
All Disability Pensions	186	322	565		632	706	
Partial Disability Pensions	44	57	108		130	177	
Total	230	379	673	193	762	883	31
United States							
Disability Insurance	1,394	2,489	2,859		2,656	2,999	
Supplemental Security Income	870	1,723	1,777		1,942	2,210	
Total	2,264	4,212	4,635	105	4,598	5,209	12
Sweden							
Total	188	289	293	56	323	361	23
Germany							
Full Disability Pensions	812	980	1,237		1,563	1,256	
Partial Disability Pensions	387	255	182		142	114	
Early Retirement for Handicapped		17	76		258	255	
Total	1,199	1,252	1,495	25	1,963	1,625	9

In the 1970s replacement rates ranged from 9 percent of before-tax earnings to 80 percent for the fully disabled.

The social nature of disability labelling is evident when eligibility criteria are implemented. To determine the level of the disability benefit it is necessary to ascertain which jobs are commensurate with the worker's current health-impaired job skills. But theoretical disability will diverge from actual earnings if the partially disabled person does not become employed in such a job. In that case it is difficult to disentangle lack of employment due to the health condition from that due to general market conditions, to discrimination, or to an unwillingness to work.

The serious recession of the early 1980s and the growing cost of the disability system put enormous pressure on the Dutch government to reduce the growth of disability transfers.

A legal measure called the "labor market consideration" had a profound effect on that determination. It was ruled that unless proven to the contrary it would be assumed that lack of employment by a partially disabled worker was the result of discriminatory behavior. As a result, the ensuing administrative practice was that unemployed partially disabled persons were treated as if they were fully disabled. That interpretation of the law made assessing theoretical earnings capacity unnecessary since a minimum impairment of 15 percent was sufficient to entitle a person to a full benefit.

The relative generosity of the system increased for another reason in the 1970s. While the 80 percent cap on before-tax wage earnings remained in place over that period, the after-tax replacement rate rose because disability recipients did not pay social security taxes on their benefits. Those taxes were raised substantially in the 1970s so that while the average real after-tax wages of workers rose by only 7 percent, they grew by 16 percent for the average beneficiary over the decade. As can be seen in Table 2, those increases in eligibility and in generosity of the system had a profound effect on the size of the disability transfer population. It nearly tripled over the decade.

The serious recession of the early 1980s and the growing costs of the disability system put enormous pressure on the government to reduce the growth of disability transfers. By 1985 a series of cuts in the before-tax replacement rate had effectively lowered it from 80 to 70 percent of earnings for both new entrants and current beneficiaries. The cumulative effect of those cuts was a reduction of almost 25 percent in the net real transfer income of disabled workers over the first five years of the decade relative to a drop of 10 percent in net earnings for able-bodied workers. For the median worker after-tax replacement rates dropped from 87 percent at the end of the 1970s to 70 percent at the end of the 1980s.

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But that did not totally halt system growth, and after sustained public debate, the Dutch parliament passed additional disability amendments that became effective in 1987. The most important was the abolition of the labor market consideration rule. But as we can see in Table 2, while the share of partial to full disability pensions has increased slightly in the last five years, 80 percent of disability beneficiaries were still receiving full benefits in 1989.

Despite the legal ban on including labor market considerations in their disability assessments, disability adjudicators still seem to either grant or deny full benefits. Denial rates have remained quite low since 1987. Between 1980 and 1986 denial rates among those who completed their one-year stay on sickness benefit averaged about 5 percent. In 1987 denial rates averaged 8 percent, and in 1988 they were 7 percent. So it is likely that this legal change has not stopped the de facto use of labor market considerations in the adjudication process.

Aarts and de Jong provide empirical evidence that the Dutch disability system's mix of generous transfer payments and broad eligibility criteria are directly responsible for the rise in disability labelling in the Netherlands. Using a simulation model, they predict that unless current policies are changed, the graying of the post World War II baby boom in the Netherlands will produce an increase of over 80 percent in disability rolls over the next two decades and an increase of from 139 to about 218 disability transfer recipients per 1,000 workers.

The United States. U.S. disability policy has substantially more limited goals than Dutch policy. Many workers have sickness benefits as part of their employer's fringe benefit package, but some do not. No short-term social sickness insurance programs exist in the United States. Workers whose health impairment is expected to be long-lasting, however, are eligible for disability benefits. But in contrast to the Netherlands, eligibility is limited to the fully impaired—workers who are expected to be unable to perform any substantial gainful activities for at least eleven months. In principle, the definition of activities includes all types of work, not merely work related to past training or job experience, and whether such work is available. But even in the United States, labor market criteria enter into the disability process.

Despite that strict eligibility criterion, the 1970s were a time of substantial increases in the disability population. One reason for that increase was the increased generosity of the system. Congress changed the disability insurance benefit calculation so that the net replacement rate for a disabled worker with median earnings increased from 35 percent at the start of the 1970s to 49 percent at the end, with the great majority of that increase occurring in the early 1970s. In addition, in 1974 the federally run supplemental security income program replaced the aid to the aged, blind, and disabled programs run by the states. That program provides a federal minimum income for the disabled, regardless of past work history.

U.S. disability policy has substantially more limited goals than Dutch policy. Eligibility is limited to the fully impaired.

But another, more important reason for the increase was that the strict health criterion used to determine eligibility for both programs was liberalized in the early 1970s by increasing the use of an individual's vocational characteristics—age, education, and type of job skills—in such determinations. As was the case in the Netherlands, that change allowed market conditions to enter into the determination, and fringe workers—those who were older, less educated, and with a history of physical labor and, hence, less likely to be employed as their health worsened—were more likely to be ruled eligible.

As we can see in Table 2, growth in those transfer programs slowed in the second half of the decade. The disability program population peaked in 1978 and actually fell over the next five years because of the substantial tightening of eligibility standards—especially the reduced use of vocational characteristics—under the Carter administration and major reevaluations of already eligible recipients in the early years of the Reagan administration. Thus, despite the most serious economic downturn since the 1930s and the pressure that it put on the disability system, disability rolls were 10 percent lower in 1983 than in 1980. The widespread reevaluation of those already on the disability rolls ended in 1983 as first the courts

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and then Congress restricted the power of the Social Security Administration to reevaluate beneficiaries.

Since 1983 the eligible population has increased modestly. Growth in the supplementary security income population followed the same path as disability insurance over the period; it fell slightly in the first three years of the Reagan administration but increased more rapidly over the rest of the decade. Overall growth in the two programs in the 1980s has been a small fraction of the previous decade's growth.

Sweden. Sweden differs dramatically from the Netherlands and the United States in its commitment to keeping work-impaired persons in the labor market. So while the first level of protection against income loss in Sweden is the sickness benefit, it is relatively temporary. Workers receive 90 percent of their wage income lost because of sickness. After ninety days the local insurance office investigates to see whether rehabilitation is necessary. Only those who are unable to respond to rehabilitation and work in a private-sector or, if necessary, a government-provided job are placed on the disability transfer rolls. For those workers who cannot be rehabilitated, eligibility is determined on medical grounds, but labor market conditions are also considered.

Growth in Swedish disability rolls is due to a change in the work requirement for impaired older workers. Germany has also experienced a blurring of health and unemployment aspects of disability policy—especially for health-impaired older workers.

Replacement rates in Sweden are as generous as in the Netherlands. Benefits for the median worker were about 75 percent of net wage earnings in the 1970s and increased to almost 90 percent in the 1980s. But the disability incidence is substantially smaller than in the Netherlands, and the growth in the transfer rolls is much lower.

The major reason for growth in the rolls over the past two decades has been a change in the work requirement for impaired older workers. Starting in the 1970s, workers over the age of sixty could become eligible for benefits solely because of labor market conditions. For example, long-term unemployed older workers not yet eligible for social security retirement benefits became automatically eligible for disability benefits once their unemployment benefits ran out. Thus, while Swedish disability rolls have risen 23 percent in the past decade, the great majority of that growth has been among older workers.

Germany. German employers are required by government mandate to provide up to six weeks of fully paid sickness benefits to their workers each year. For workers requiring a longer period, national health insurance replaces 80 percent of their last regular wage income. Eligibility for disability pension benefits is determined on medical grounds, but labor market conditions are also taken into consideration.

Workers who are unable to earn a regular income owing to reductions in physical or mental capacity are eligible for a full benefit. Workers whose impairment reduces their earnings capacity by one-half when compared with other workers with similar training and experience are eligible for a partial benefit. For those who do not respond to medical or vocational rehabilitation, permanent disability benefits are provided. The net replacement for a full disability pensioner who earned the median wage over his lifetime was about 60 percent in the 1970s and about 64 percent in the 1980s. A partial benefit is exactly two-thirds that of full benefits.

As we can see in Table 2, Germany experienced the smallest increase—25 percent—in its transfer population in the 1970s and a 9 percent increase in the 1980s. A major change has taken place in the mix of benefits provided, however. Almost all beneficiaries now receive full disability pensions because of a change in the system, initiated in 1969 and extended in 1975, that provided a full disability pension to unemployed partially disabled workers.

Thus, Germany has also experienced a blurring of health and unemployment aspects of disability policy—especially for health-impaired older workers. While the earliest retirement age for able-bodied male workers in Germany is sixty-three, unemployed health-impaired older workers can begin to receive disability-related retirement benefits at age sixty. That effective reduction in the retirement age has substantially increased the incidence of disability transfers in the older population over the past two decades.

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For younger health-impaired workers, that is less the case. They are offered substantial rehabilitation services, and the government attempts to maintain those workers in the labor force with a quota system. All firms employing sixteen or more workers must hire one health-impaired worker for each sixteen workers employed.

The Dutch Disease of the 1970s

Our brief overview of disability policy makes clear that Dutch policy during the 1970s was substantially out of step with that of its European neighbors and the United States. That explains why the Netherlands' disability rolls rose so much faster than those of the other countries.

Dutch social policy is out of step with that of Sweden, not because it offers more generous benefits, but because it fails to emphasize rehabilitation and maintenance of the worker in the labor market. In Sweden, except for older workers, transfers are used only as a last resort after rehabilitation and work in a government-sponsored transition job fail. A major reason for Sweden's low transfer rate, despite very high benefits, is that strong social pressure is put on those with job impairments to stick with rehabilitation programs and to work rather than to accept transfers. And Sweden's policy ensures government jobs at least for younger health-impaired workers who could not find work in the private sector.

Dutch social policy is out of step with that of Germany, in part because it offers somewhat higher benefits and has less restricted eligibility rules. Both countries provide full benefits for partially health-impaired unemployed workers, but the minimum impairment rate in Germany is 50 percent rather than 15 percent in the Netherlands. In addition, Germany has an active policy to keep health-impaired workers on the job that includes subsidies to accommodate those workers and a quota system to encourage employers to maintain them in the workplace.

Ironically, Dutch and U.S. disability policies were the most similar in the 1970s, and not surprisingly, those countries experienced the greatest growth in their disability transfer populations. Although the United States started the decade with a substantially lower disability prevalence than the Netherlands, Sweden, and Germany, as a result of major increases in benefits and in the use of vocational characteristics to determine eligibility, the U.S. transfer population doubled by the end of the decade, and its prevalence rate neared those of the European countries at the start of the decade.

Dutch and American Policy Outcomes in the 1980s

Given those differing policy experiences in the 1970s, it is not surprising that it was in the Netherlands and in the United States that cries for reform of the disability system were most loudly heard in the 1980s. Both governments significantly reduced the growth in their systems during very difficult economic times and, to some degree, at the expense of their disabled populations.

The timing of that change in policy is particularly noteworthy because in the 1970s the disability systems of all four countries had been under increasing pressure to consider employment conditions as well as health conditions as criteria for disability benefits. Thus, in the absence of policy changes, one would have expected disability rolls to increase during bad economic times. Yet it was during the deepest world recession since the 1930s that disability rolls were actually cut in the United States and the rate of increase substantially reduced in the Netherlands.

During the very difficult economic times of the 1980s, both the United States and the Netherlands significantly reduced the growth in their disability systems, to some degree at the expense of their disabled populations.

The dramatic shift in disability policy started by the Carter administration and vigorously pursued by the Reagan administration was extremely controversial. Purging the disability rolls of those who are capable of doing some gainful activities may comply with the letter of the law but still may put an enormous burden on the families of health-impaired workers, who also may have poor job skills that put them on the outer fringes of the labor market even in good times. Because such workers are likely to be the hardest hit by recession, it was argued that this policy forced the least able in society to bear the greatest burden of the recession. A counterargument to that point of view

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Table 3: Family Economic Well-Being of Health-Impaired Men in the United States Relative to Able-Bodied Men across Education Levels, 1967–1987

	1967	1972	1975	1979	1981	1983	1987
	Wage Earnings of Health-Impaired Men as a Percentage of Able-Bodied						
Overall	.66	.74	.66	.58	.51	.54	.49
High School Dropout	.62	.67	.36	.46	.29	.32	.30
High School Degree	.77	.75	.65	.62	.44	.57	.64
High School Plus	.69	.85	.93	.70	.64	.71	.72
	Family Income[a] of Health-Impaired Men as a Percentage of Able-Bodied						
Overall	.74	.80	.80	.73	.66	.72	.75
High School Dropout	.78	.81	.78	.75	.70	.72	.71
High School Degree	.88	.84	.84	.76	.69	.74	.91
High School Plus	.78	.83	.89	.79	.75	.83	.89

[a]Family income is adjusted for household size by using the official poverty line equalizing scale values.

was that in the long run the best government palliative to the health-impaired population was not more access to transfers that discourage work but a strong economy that would provide work for all who wanted it.

Labelling the unemployed as disabled does little to correct the underlying problems in the economy and may retard the return of such workers to the work force during recovery.

The recession of 1983 was followed by seven years of economic growth, and Table 3 provides some evidence on that issue. It looks at the wage earnings of health-impaired men as a percentage of the wage earnings of able-bodied men in the 1970s and 1980s. And it looks at the relative family income for such men over that period. Those ratios are also provided within educational classes. The results provide mixed evidence for those who believe that such a tough-minded, short-run policy was better in the long run.

On average, the relative wage earnings of health-impaired men fell in the 1970s, but relative family income rose as transfer benefits became more generous and widespread in the first part of the 1970s. The drop in both benefits and wage earnings in the last part of that decade and in the recession years of the next attests to the increasing relative hardship of that population. By 1987, four years into the economic recovery, relative wage earnings of health-impaired men had not risen from their recession period low, but the relative family income of those health-impaired men had. In fact, the recovery brought faster and greater increases to the families of health-impaired men than to able-bodied families. In large part, that was a result of increasing wage earnings, but not so much that of the health-impaired men as that of their family members.

By 1987 the family income of high school and college educated, health-impaired workers was at a two-decade high relative to their able-bodied counterparts both because their wage earnings had fully recovered from the recession and because other family members were wage earners. But that long-run success story was not universal. For the doubly handicapped—men with very poor education (and by proxy those most likely to have poor work skills) as well as a health impairment—there has been no recovery from the recession either in wage earnings or in family income.

Painting the Roses Red

Each society must evaluate the burden that it will permit its citizens to bear when they suffer a health impairment or the loss of a job and must weigh that against the burden such protection places on able-bodied workers in that society. Cross-national comparisons permit one to look at the outcomes of alternative national policies. That is often as close to a "counterfactual" with respect to what actually happened as policymakers are likely to see. Hence, as policymakers in the United

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Table 4: Official and Hidden Unemployment Rates, 1970–1989

	1970	1975	1980	1983	1985	1989
Official Unemployment Rates						
United States	4.8	8.3	7.0	9.5	7.1	5.2
Germany	.6	3.6	2.9	8.0	7.2	5.6
Netherlands	1.0	5.2	6.0	12.0	10.6	8.3
Dutch Hidden Unemployment Rates						
U.S. Based[a]	3.1	8.4	13.4	19.0	17.9	16.3
German Based[b]	1.0	7.3	11.9	17.0	15.5	15.4

[a]Adds those on disability rolls above the United States disability prevalence rate to the official unemployed.
[b]Adds those on disability rolls above the German prevalence rate to official unemployed.

States are asked to develop policies for the 1990s in the light of policy outcomes in the 1980s, it is useful to look at how the Netherlands "cured" its disability problem.

Disability transfers are sensitive to the business cycle—down in good times, up in bad times. When jobs are hard to find, using the disability rolls to protect the unemployed is a comfortable way to ease the bad effects of economic downturns. But a policy of labelling the unemployed as disabled is much like the policy of the cards in *Alice in Wonderland,* who painted the roses red.

Painting the roses red does little to correct the underlying problem of the rose bush. Labelling unemployed people as disabled does little to correct the underlying problems in the economy and may retard the return of such workers to the work force during recovery.

In the 1970s the Netherlands vigorously pursued a policy of labelling the unemployed as disabled. Table 4 shows that the official unemployment rates in the United States were substantially higher than those in the Netherlands during that period. But if one considers that part of the Dutch unemployed population was hidden in the disability rolls, then "true" unemployment during that period changes substantially.

If one assumes that the true underlying disability rate in the Netherlands was in fact the same as that in the United States during the 1970s—see Table 1—and that all the disabled on the rolls above that baseline were actually hidden unemployed, then the Dutch unemployment rate increases from 1 percent to 3.1 percent in 1970 and from 6 percent to 13.4 percent in 1980. And when those "truer" measures of unemployment are compared with rates in the United States, the much more serious nature of unemployment in the Netherlands is clearly seen.

Both the United States and the Netherlands drastically changed their disability policies in the 1980s. As we have seen, in the United States that led to serious short-run problems for the health-impaired population as a whole and long-term problems for the doubly handicapped. But after 1983, the United States also experienced seven years of economic growth and a drop in unemployment to rates near those at the start of the 1970s. And those low rates were not achieved by hiding the unemployed on the disability rolls. In 1989 disability rolls were only slightly higher than at their peak in the late 1970s.

While changes in Dutch disability policy lessened the dangers of a runaway disability program, the underlying unemployment problem was not corrected.

While we have seen that the Dutch began to end their policy of painting the roses red in the 1980s—at considerable cost to the disabled population—they did not end their unemployment problem. Many of the newly unemployed that would have been hidden on the disability rolls during the Dutch economic recession of the early 1980s were not enrolled. Instead, they went onto the unemployment rolls. In 1980 the official Dutch unemployment rate was close to that of the United States. But at the depth of the recession, it had increased to 12 percent—more than 25 percent higher than in the United States. While recovery has also occurred in the Netherlands and official unemployment rates are now lower, they still remain a relatively high 8.3 percent, and they are

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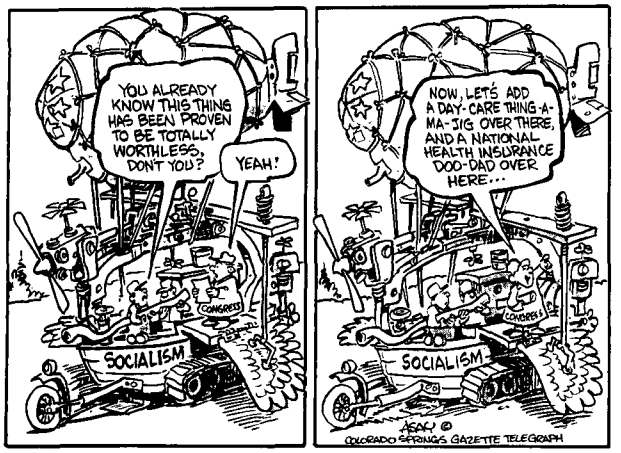
YOU ALREADY KNOW THIS THING HAS BEEN PROVEN TO BE TOTALLY WORTHLESS, DON'T YOU?
YEAH!
SOCIALISM
CONGRESS
NOW, LET'S ADD A DAY-CARE THING-A-MA-JIG OVER THERE, AND A NATIONAL HEALTH INSURANCE DOO-DAD OVER HERE...
SOCIALISM
CONGRESS
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60 percent higher than in the United States. But if we continue our comparison of hidden unemployment into the 1980s, we see that the story gets considerably worse. In 1989 when hidden unemployment within the disability population is included, the Dutch unemployment rate increases from 8.3 to 16.3 percent, more than three times that of the United States.

Because U.S. disability rules are considerably tighter and less generous than the Dutch and have excluded all but the most severely health-impaired, such a restricted definition of disability forces a very high share of the Dutch disabled population into the hidden unemployed. We also consider an alternative definition in Table 4. Assume that the true disability incidence rate in the Netherlands is the same as that in Germany,

Dutch social welfare policy, which guarantees a very high social safety net for all its citizens, places a high tax burden on the active work force.

where the partially health-impaired are also granted full benefits if they are unemployed. In that case the hidden unemployment rate is slightly lower but still shows the tremendous postrecession gap between the United States and the Netherlands. True unemployment in the Netherlands is 15.4 percent in 1989, nearly three times that of both the United States and Germany. What Table 4 suggests is that while changes in Dutch disability policy lessened the dangers of a runaway disability program, the underlying unemployment problem was not corrected.

The Dutch Economic Burden

Dutch social welfare policy guarantees a very high social safety net for all its citizens. The Dutch minimum wage is extremely high relative to that of the United States. In U.S. dollars (two guilder to the dollar) it costs an employer $16,000 per year to hire a full-time (thirty-eight hours per week), minimum-wage worker. Family welfare payments, which are by law universal, are equal to 100 percent of the net of taxes minimum wage. Unemployment benefits are approximately equal to the disability payment but have limited duration.

Table 5 shows some consequences of those general labor market policies. Since 1980 the number of employed persons in the Netherlands has increased by 19 percent. But the great majority of that increase is due to the movement into the labor force of women doing part-time work. When employment is adjusted to full-time work years, the decade-long gain is only 4 percent. In contrast, the three major transfer programs that provide benefits to people of working age (aged fifteen to sixty-four) all grew enormously in the 1970s and have continued to grow at substantial rates in the 1980s.

In Table 1 we showed the disability prevalence rate per 1,000 workers. In Table 5 we expand that to include the prevalence of all working-age transfer receipts per 1,000 full-time workers. Just twenty years ago there were only sixty-nine working-age transfer recipients for every 1,000 full-time workers. Fueled mainly by a runaway disability program and a stagnant work force, that ratio nearly tripled in the 1970s. The disability program was modified in the 1980s, but long-term unemployment due to the recession of the early 1980s resulted in a record-high prevalence rate of 333 in 1985. Lackluster employment growth since then means that the Dutch begin the 1990s with three people of working age receiving transfers for every ten full-time workers.

The tax burden that this places on the active work force is startling from a U.S. perspective. The employer's cost of a full-time, minimum-wage worker is around $16,000 per year. But 21 percent of that amount is employer-based taxes and 20 percent is employee-based taxes. The worker's net

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Table 5: Work Effort and Social Welfare Transfers in the Netherlands, 1970–1990 (thousands)

	1970	1975	1980	Percent Change 1970s	1983	1985	1990	Percent Change 1980s
Employed Persons	5204[a]	5,161	5,500	6		8,650	6,550	19
Employed Work Years	4,709	4,670	4,807	2	4,531	4,589	4,980	4
Transfers								
Disability	196	312	605	209	660	695	766	27
Unemployment	58	197	235	305	615	650	526	124
Social Assistance	70	117	117	67	155	183	182	56
Total	324	626	957	195	1430	1528	1474	54
Transfer Recipients (per thousand work years)	69	134	199	188	316	333	296	49

[a]Estimate.

wage is only about $9,600. Put slightly differently, the tax burden—shared by both the employer and the employee—of hiring a full-time, minimum-wage worker is equal to 70 percent of take-home pay. For higher wage workers the burden is even greater because of the progressive income tax.

Policies for the Future

All political parties in the Netherlands are urging major reforms of the Dutch social welfare system. The prime minister has offered to resign if the disability population passes one million. In January 1991 a major blue-ribbon commission recommended reforms to parliament that, among other things, will lower the minimum wage and, hence, the welfare benefits that are linked to it, reduce the tax on second earners in a household and thus encourage women to enter the labor force in larger numbers, and further restrict eligibility for disability benefits.

In the spring of 1991 the majority center-left coalition responded by agreeing to efforts to reduce the disability population as part of its more general effort to lower taxes through increased labor-force participation. The coalition submitted a broad set of measures aimed at maintaining handicapped workers in the labor force. Those included introducing experience-rating for the sickness and disability benefits programs, protecting jobs for handicapped workers, and increasing the scope of commensurate work that those with handicaps were expected to accept before they could receive disability payments.

In addition, on July 14, 1991, the prime minister issued a highly controversial proposal to limit the duration of the wage-related part of disability benefits for those who received benefits before the age of fifty. They would lose their entitlement to those second-tier benefits after no more than six years. In March 1992 legislation was enacted that put experience-rating into the disability system. Employers are now subject to a system of penalties and bonuses related to the disability incidence and unemployment ratio of their employees. Firms are subject to a penalty for each worker who enters the disability rolls and receive a bonus for each disability beneficiary they employ. Thus, even a country strongly committed to principles of solidarity and with a long-standing commitment to high guaranteed levels of social welfare has paused to evaluate the results of its social policies over the past two decades.

It is difficult to fulfill social welfare promises while maintaining labor force growth in the very structured labor markets that such policies help create.

A review of the Dutch experience and that of the other countries studied here suggests that disability policy is only a part of a broader labor market policy that each country must formulate for itself. In the late 1970s and early 1980s the United States drastically reduced access to disability benefits. That had a significant negative effect on the health-impaired population, but by the end of the decade, strong economic growth had allowed the families of the health-impaired with good job skills to recover. The unfinished work of social policy in the United States is to provide protection

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to the doubly handicapped—those with both poor health and poor job skills—who have not recovered.

But as we investigate policies to correct those and other problems associated with the widening inequality of wages earned in the United States caused in part by past social policy, it is also important to remember the positive side of that policy—a strong and sustained economic recovery and a growing U.S. work force. A cautionary lesson of the past two decades of social welfare policies in the Netherlands is how difficult it is to fulfill social welfare promises while maintaining the necessary labor force growth to keep them in the very structured labor markets that such policies help create.

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Global Warming

The Origin and Nature of the Alleged Scientific Consensus

Richard S. Lindzen

Most of the literate world today regards "global warming" as both real and dangerous. Indeed, the diplomatic activity concerning warming might lead one to believe that it is the major crisis confronting mankind. The June 1992 Earth Summit in Rio de Janeiro, Brazil, focused on international agreements to deal with that threat, and the heads of state from dozens of countries attended. I must state at the outset, that, as a scientist, I can find no substantive basis for the warming scenarios being popularly described. Moreover, according to many studies I have read by economists, agronomists, and hydrologists, there would be little difficulty adapting to such warming if it were to occur. Such was also the conclusion of the recent National Research Council's report on adapting to global change. Many aspects of the catastrophic scenario have already been largely discounted by the scientific community. For example, fears of massive sea-level increases accompanied many of the early discussions of global warming, but those estimates have been steadily reduced by orders of magnitude, and now it is widely agreed that even the potential contribution of warming to sea-level rise would be swamped by other more important factors.

Richard S. Lindzen is the Alfred P. Sloan Professor of Meteorology at the Massachusetts Institute of Technology.

To show why I assert that there is no substantive basis for predictions of sizeable global warming due to observed increases in minor greenhouse gases such as carbon dioxide, methane, and chlorofluorocarbons, I shall briefly review the science associated with those predictions.

Summary of Scientific Issues

Before even considering "greenhouse theory," it may be helpful to begin with the issue that is almost always taken as a given—that carbon dioxide will inevitably increase to values double and even quadruple present values. Evidence from the analysis of ice cores and after 1958 from direct atmospheric sampling shows that the amount of carbon dioxide in the air has been increasing since 1800. Before 1800 the density was about 275 parts per million by volume. Today it is about 355 parts per million by volume. The increase is generally believed to be due to the combination of increased burning of fossil fuels and before 1905 to deforestation. The total source is estimated to have been increasing exponentially at least until 1973. From 1973 until 1990 the rate of increase has been much slower, however. About half the production of carbon dioxide has appeared in the atmosphere.

Predicting what will happen to carbon dioxide over the next century is a rather uncertain matter. By assuming a shift toward the increased use of coal, rapid advances in the third world's standard

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of living, large population increases, and a reduction in nuclear and other nonfossil fuels, one can generate an emissions scenario that will lead to a doubling of carbon dioxide by 2030—if one uses a particular model for the chemical response to carbon dioxide emissions. The Intergovernmental Panel on Climate Change Working Group I's model referred to that as the "business as usual" scenario. As it turns out, the chemical model used was inconsistent with the past century's record; it would have predicted that we would already have about 400 parts per million by volume. An improved model developed at the Max Planck Institute in Hamburg shows that even the "business as usual" scenario does not double carbon dioxide by the year 2100. It seems unlikely moreover that the indefinite future of energy belongs to coal. I also find it difficult to believe that technology will not lead to improved nuclear reactors within fifty years.

There is no substantive basis for predictions of sizeable global warming due to observed increases in minor greenhouse gases such as carbon dioxide, methane, and chlorofluorocarbons.

Nevertheless, we have already seen a significant increase in carbon dioxide that has been accompanied by increases in other minor greenhouse gases such as methane and chlorofluorocarbons. Indeed, in terms of greenhouse potential, we have had the equivalent of a 50 percent increase in carbon dioxide over the past century. The effects of those increases are certainly worth studying—quite independent of any uncertain future scenarios.

The Greenhouse Effect. The crude idea in the common popular presentation of the greenhouse effect is that the atmosphere is transparent to sunlight (apart from the very significant reflectivity of both clouds and the surface), which heats the Earth's surface. The surface offsets that heating by radiating in the infrared. The infrared radiation increases with increasing surface temperature, and the temperature adjusts until balance is achieved. If the atmosphere were also transparent to infrared radiation, the infrared radiation produced by an average surface temperature of minus eighteen degrees centigrade would balance the incoming solar radiation (less that amount reflected back to space by clouds). The atmosphere is not transparent in the infrared, however. So the Earth must heat up somewhat more to deliver the same flux of infrared radiation to space. That is what is called the greenhouse effect.

The fact that the Earth's average surface temperature is fifteen degrees centigrade rather than minus eighteen degrees centigrade is attributed to that effect. The main absorbers of infrared in the atmosphere are water vapor and clouds. Even if all other greenhouse gases (such as carbon dioxide and methane) were to disappear, we would still be left with over 98 percent of the current greenhouse effect. Nevertheless, it is presumed that increases in carbon dioxide and other minor greenhouse gases will lead to significant increases in temperature. As we have seen, carbon dioxide is increasing. So are other minor greenhouse gases. A widely held but questionable contention is that those increases will continue along the path they have followed for the past century.

The simple picture of the greenhouse mechanism is seriously oversimplified. Many of us were taught in elementary school that heat is transported by radiation, convection, and conduction. The above representation only refers to radiative transfer. As it turns out, if there were only radiative heat transfer, the greenhouse effect would warm the Earth to about seventy-seven degrees centigrade rather than to fifteen degrees centigrade. In fact, the greenhouse effect is only about 25 percent of what it would be in a pure radiative situation. The reason for this is the presence of convection (heat transport by air motions), which bypasses much of the radiative absorption.

What is really going on is schematically illustrated in Figure 1. The surface of the Earth is cooled in large measure by air currents (in various forms including deep clouds) that carry heat upward and poleward. One consequence of this picture is that it is the greenhouse gases well above the Earth's surface that are of primary importance in determining the temperature of the Earth. That is especially important for water vapor, whose density decreases by about a factor of 1,000 between the surface and ten kilometers above the surface. Another consequence is that one cannot even calculate the temperature of the Earth without models that accurately reproduce the motions

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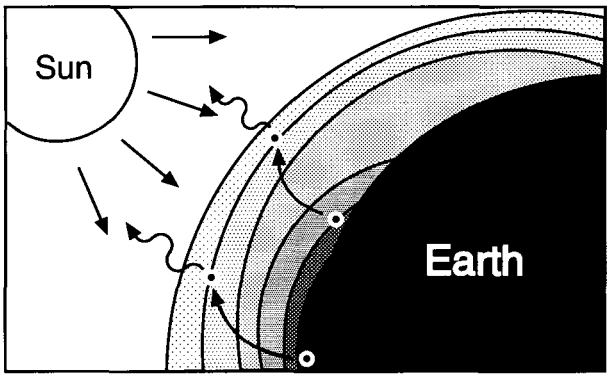
Figure 1: The Role of Dynamic Heat Transport in Modifying Greenhouse Warming



Note: Infrared opacity is greatest at the ground over the tropics and diminishes as one goes poleward and upward. Air currents bodily carry heat to regions of diminished infrared opacity where the heat is radiated to space—balancing absorbed sunlight. Lighter shading represents reduced opacity due to diminishing water vapor density.

of the atmosphere. Indeed, present models have large errors here—on the order of 50 percent. Not surprisingly, those models are unable to calculate correctly either the present average temperature of the Earth or the temperature ranges from the equator to the poles. Rather, the models are adjusted or "tuned" to get those quantities approximately right.

It is still of interest to ask what we would expect a doubling of carbon dioxide to do. A large number of calculations show that if this is all that happened, we might expect a warming of from .5 to 1.2 degrees centigrade. The general consensus is that such warming would present few, if any, problems. But even that prediction is subject to some uncertainty because of the complicated way the greenhouse effect operates. More important, the climate is a complex system where it is impossible for all other internal factors to remain constant. In present models those other factors amplify the effects of increasing carbon dioxide and lead to predictions of warming in the neighborhood of four to five degrees centigrade. Internal processes within the climate system that change in response to warming in such a manner as to amplify the response are known as positive feedbacks. Internal processes that diminish the response are known as negative feedbacks. The most important positive feedback in current models is due to water vapor. In all current models upper tropospheric (five to twelve kilometers) water vapor—the major greenhouse gas—increases as surface temperatures increase. Without that feedback, no current model would predict warming in excess of 1.7 degrees centigrade—regardless of any other factors. Unfortunately, the way current models handle factors such as clouds and water vapor is disturbingly arbitrary. In many instances the underlying physics is simply not known. In other instances there are identifiable errors. Even computational errors play a major role. Indeed, there is compelling evidence for all the known feedback factors to actually be negative. In that case, we would expect the warming response to carbon dioxide doubling alone to be diminished.

The way current models designed to predict the Earth's temperature handle factors such as clouds and water vapor is disturbingly arbitrary. In many instances the underlying physics is not known. In other instances there are identifiable errors.

It is commonly suggested that society should not depend on negative feedbacks to spare us from a "greenhouse catastrophe." What is omitted from such suggestions is that current models depend heavily on undemonstrated positive feedback factors to predict high levels of warming. The effects of clouds have been receiving the closest scrutiny. That is not unreasonable. Cloud cover in models is poorly treated and inaccurately predicted. Yet clouds reflect about seventy-five watts per square meter. Given that a doubling of carbon dioxide would change the surface heat flux by only two watts per square meter, it is evident that a small change in cloud cover can strongly affect the response to carbon dioxide. The situation is complicated by the fact that clouds at high altitudes can also supplement the greenhouse effect. Indeed, the effects of clouds in reflecting light and in enhancing the greenhouse effect are roughly in balance. Their actual effect on climate depends both on the response of clouds to warming and on the possible imbalance of their cooling and heating effects.

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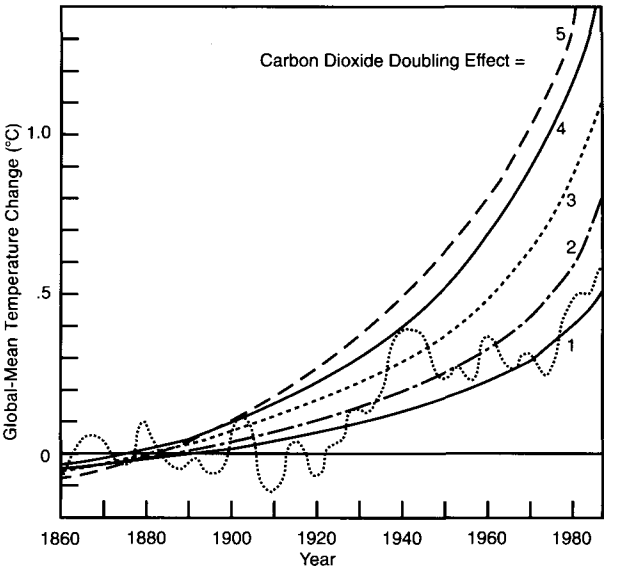
Similarly, factors involving the contribution of snow cover to reflectivity serve, in current models, to amplify warming due to increasing carbon dioxide. What happens seems reasonable enough; warmer climates presumably are associated with less snow cover and less reflectivity—which, in turn, amplify the warming. Snow is associated with winter when incident sunlight is minimal, however. Moreover, clouds shield the Earth's surface from the sun and minimize the response to snow cover. Indeed, there is growing evidence that clouds accompany diminishing snow cover to such an extent as to make that feedback factor negative. If, however, one asks why current models predict that large warming will accompany increasing carbon dioxide, the answer is mostly due to the effect of the water vapor feedback. Current models all predict that warmer climates will be accompanied by increasing humidity at all levels. As already noted, such behavior is an artifact of the models since they have neither the physics nor the numerical accuracy to deal with water vapor. Recent studies of the physics of how deep clouds moisturize the atmosphere strongly suggest that this largest of the positive feedbacks is not only negative, but very large.

Current models exaggerate the response of the Earth's temperature to increasing carbon dioxide. Perhaps even more significantly, the models' predictions for the past century incorrectly describe the pattern of warming and greatly overestimate its magnitude.

Not only are there major reasons to believe that models are exaggerating the response to increasing carbon dioxide, but, perhaps even more significantly, the models' predictions for the past century incorrectly describe the pattern of warming and greatly overestimate its magnitude. The global average temperature record for the past century or so is irregular and not without problems. It does, however, show an average increase in temperature of about .45 degree centigrade plus or minus .15 degree centigrade with most of the increase occurring before 1940, followed by some cooling through the early 1970s and a rapid (but modest) temperature increase in the late 1970s.

Figure 2: Observed Behavior of Globally Averaged Temperatures since 1860 and Expected Behavior from Models Whose Equilibrium Response to a Doubling of Carbon Dioxide Is Indicated on the Curves



As noted, we have already seen an increase in "equivalent" carbon dioxide of 50 percent. Thus, on the basis of models that predict a four degree centigrade warming for a doubling of carbon dioxide we might expect to have seen a warming of two degrees centigrade already. If, however, we include the delay imposed by the oceans' heat capacity, we might expect a warming of about one degree centigrade—which is still twice what has been observed. Moreover, most of that warming occurred before the bulk of the minor greenhouse gases were added to the atmosphere. Figure 2 shows what might have been expected for models with differing sensitivities to a doubling of carbon dioxide. What we see is that the past record is most consistent with an equilibrium response to a doubling of about 1.3 degrees centigrade—assuming that all the observed warming was due to increasing carbon dioxide. There is nothing in the record that can be distinguished from the natural variability of the climate, however.

If one considers the tropics, that conclusion is even more disturbing. There is ample evidence that the average equatorial sea surface has remained within plus or minus one degree centigrade of its present temperature for billions of

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years, yet current models predict average warming of from two to four degrees centigrade even at the equator. It should be noted that for much of the Earth's history, the atmosphere had much more carbon dioxide than is currently anticipated for centuries to come. I could, in fact, go on at great length listing the evidence for small responses to a doubling of carbon dioxide; there are space constraints, however.

Consensus and the Current "Popular Vision"

Many studies from the nineteenth century on suggested that industrial and other contributions to increasing carbon dioxide might lead to global warming. Problems with such predictions were also long noted, and the general failure of such predictions to explain the observed record caused the field of climatology as a whole to regard the suggested mechanisms as suspect. Indeed, the global cooling trend of the 1950s and 1960s led to a minor global cooling hysteria in the 1970s. All that was more or less normal scientific debate, although the cooling hysteria had certain striking analogues to the present warming hysteria including books such as *The Genesis Strategy* by Stephen Schneider and *Climate Change and World Affairs* by Crispin Tickell—both authors are prominent in support of the present concerns as well—"explaining" the problem and promoting international regulation. There was also a book by the prominent science writer Lowell Ponte (*The Cooling*) that derided the skeptics and noted the importance of acting in the absence of firm, scientific foundation. There was even a report by the National Research Council of the U.S. National Academy of Sciences reaching its usual ambiguous conclusions. But the scientific community never took the issue to heart, governments ignored it, and with rising global temperatures in the late 1970s the issue more or less died. In the meantime, model calculations—especially at the Geophysical Fluid Dynamics Laboratory at Princeton—continued to predict substantial warming due to increasing carbon dioxide. Those predictions were considered interesting, but largely academic, exercises—even by the scientists involved.

The present hysteria formally began in the summer of 1988, although preparations had been put in place at least three years earlier. That was an especially warm summer in some regions, particularly in the United States. The abrupt increase in temperature in the late 1970s was too abrupt to be associated with the smooth increase in carbon dioxide. Nevertheless, James Hansen, director of the Goddard Institute for Space Studies, in testimony before Sen. Al Gore's Committee on Science, Technology and Space, said, in effect, that he was 99 percent certain that temperature had increased and that there was *some* greenhouse warming. He made no statement concerning the relation between the two.

Despite the fact that those remarks were virtually meaningless, they led the environmental advocacy movement to adopt the issue immediately. The growth of environmental advocacy since the 1970s has been phenomenal. In Europe the movement centered on the formation of Green parties; in the United States the movement centered on the development of large public interest advocacy groups. Those lobbying groups have budgets of several hundred million dollars and employ about 50,000 people; their support is highly valued by many political figures. As with any large groups, self-perpetuation becomes a crucial concern. "Global warming" has become one of the major battle cries in their fundraising efforts. At the same time, the media unquestioningly accept the pronouncements of those groups as objective truth.

The abrupt increase in temperature in the late 1970s was too abrupt to be associated with the smooth increase in carbon dioxide. The present hysteria over rising global temperatures began in the summer of 1988, an especially warm summer in the United States.

Within the large-scale climate modelling community—a small subset of the community interested in climate—however, the immediate response was to criticize Hansen for publicly promoting highly uncertain model results as relevant to public policy. Hansen's motivation was not totally obvious, but despite the criticism of Hansen, the modelling community quickly agreed that large warming was not impossible. That was still enough for both the politicians and advocates who have generally held that any hint of environmental

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danger is a sufficient basis for regulation unless the hint can be rigorously disproved. That is a particularly pernicious asymmetry, given that rigor is generally impossible in environmental sciences.

By early 1989 the popular media were declaring that "all scientists" agreed that warming was real and catastrophic in its potential. By the fall of 1989 some media were becoming aware that there was controversy. Cries followed from environmentalists that skeptics were receiving excessive exposure.

Other scientists quickly agreed that with increasing carbon dioxide some warming might be expected and that with large enough concentrations of carbon dioxide the warming might be significant. Nevertheless, there was widespread skepticism. By early 1989, however, the popular media in Europe and the United States were declaring that "all scientists" agreed that warming was real and catastrophic in its potential.

As most scientists concerned with climate, I was eager to stay out of what seemed like a public circus. But in the summer of 1988 Lester Lave, a professor of economics at Carnegie Mellon University, wrote to me about being dismissed from a Senate hearing for suggesting that the issue of global warming was scientifically controversial. I assured him that the issue was not only controversial but also unlikely. In the winter of 1989 Reginald Newell, a professor of meteorology at the Massachusetts Institute of Technology, lost National Science Foundation funding for data analyses that were failing to show net warming over the past century. Reviewers suggested that his results were dangerous to humanity. In the spring of 1989 I was an invited participant at a global warming symposium at Tufts University. I was the only scientist among a panel of environmentalists. There were strident calls for immediate action and ample expressions of impatience with science. Claudine Schneider, then a congressman from Rhode Island, acknowledged that "scientists may disagree, but we can hear Mother Earth, and she is crying." It seemed clear to me that a very dangerous situation was arising, and the danger was not of "global warming" itself.

In the spring of 1989 I prepared a critique of global warming, which I submitted to *Science,* a magazine of the American Association for the Advancement of Science. The paper was rejected without review as being of no interest to the readership. I then submitted the paper to the *Bulletin of the American Meteorological Society,* where it was accepted after review, rereviewed, and reaccepted—an unusual procedure to say the least. In the meantime, the paper was attacked in *Science* before it had even been published. The paper circulated for about six months as samizdat. It was delivered at a Humboldt conference at M.I.T. and reprinted in the *Frankfurter Allgemeine.*

In the meantime, the global warming circus was in full swing. Meetings were going on nonstop. One of the more striking of those meetings was hosted in the summer of 1989 by Robert Redford at his ranch in Sundance, Utah. Redford proclaimed that it was time to stop research and begin acting. I suppose that that was a reasonable suggestion for an actor to make, but it is also indicative of the overall attitude toward science. Barbara Streisand personally undertook to support the research of Michael Oppenheimer at the Environmental Defense Fund, although he is primarily an advocate and not a climatologist. Meryl Streep made an appeal on public television to stop warming. A bill was even prepared to guarantee Americans a stable climate.

By the fall of 1989 some media were becoming aware that there was controversy (*Forbes* and *Reader's Digest* were notable in that regard). Cries followed from environmentalists that skeptics were receiving excessive exposure. The publication of my paper was followed by a determined effort on the part of the editor of the *Bulletin of the American Meteorological Society,* Richard Hallgren, to solicit rebuttals. Such articles were prepared by Stephen Schneider and Will Kellogg, a minor scientific administrator for the past thirty years, and those articles were followed by an active correspondence mostly supportive of the skeptical spectrum of views. Indeed, a recent Gallup poll of climate scientists in the American Meteorological Society and in the American Geophysical Union shows that a vast majority doubts that there has been any identifiable man-caused warming to date (49 percent asserted no, 33 percent did not know, 18 percent thought some has occurred;

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however, among those actively involved in research and publishing frequently in peer-reviewed research journals, none believes that any man-caused global warming has been identified so far). On the whole, the debate within the meteorological community has been relatively healthy and, in this regard, unusual.

Outside the world of meteorology, Greenpeace's Jeremy Legett, a geologist by training, published a book attacking critics of warming—especially me. George Mitchell, Senate majority leader and father of a prominent environmental activist, also published a book urging acceptance of the warming problem (*World on Fire: Saving an Endangered Earth*). Sen. Gore recently published a book (*Earth in the Balance: Ecology and the Human Spirit*). Those are just a few examples of the rapidly growing publications on warming. Rarely has such meager science provoked such an outpouring of popularization by individuals who do not understand the subject in the first place.

The activities of the Union of Concerned Scientists deserve special mention. That widely supported organization was originally devoted to nuclear disarmament. As the cold war began to end, the group began to actively oppose nuclear power generation. Their position was unpopular with many physicists. Over the past few years, the organization has turned to the battle against global warming in a particularly hysterical manner. In 1989 the group began to circulate a petition urging recognition of global warming as potentially the great danger to mankind. Most recipients who did not sign were solicited at least twice more. The petition was eventually signed by 700 scientists including a great many members of the National Academy of Sciences and Nobel laureates. Only about three or four of the signers, however, had any involvement in climatology. Interestingly, the petition had two pages, and on the second page there was a call for renewed consideration of nuclear power. When the petition was published in the *New York Times*, however, the second page was omitted. In any event, that document helped solidify the public perception that "all scientists" agreed with the disaster scenario. Such a disturbing abuse of scientific authority was not unnoticed. At the 1990 annual meeting of the National Academy of Sciences, Frank Press, the academy's president, warned the membership against lending their credibility to issues about which they had no special knowledge. Special reference was made to the published petition. In my opinion what the petition did show was that the need to fight "global warming" has become part of the dogma of the liberal conscience—a dogma to which scientists are not immune.

At the same time, political pressures on dissidents from the "popular vision" increased. Sen. Gore publicly admonished "skeptics" in a lengthy *New York Times* op-ed piece. In a perverse example of double-speak he associated the "true believers" in warming with Galileo. He also referred, in another article, to the summer of 1988 as the Kristallnacht before the warming holocaust.

A recent Gallup poll of climate scientists shows that a vast majority doubts that there has been any identifiable man-caused warming to date.

The notion of "scientific unanimity" is currently intimately tied to the Working Group I report of the Intergovernmental Panel on Climate Change issued in September 1990. That panel consists largely of scientists posted to it by government agencies. The panel has three working groups. Working Group I nominally deals with climate science. Approximately 150 scientists contributed to the report, but university representation from the United States was relatively small and is likely to remain so, since the funds and time needed for participation are not available to most university scientists. Many governments have agreed to use that report as the authoritative basis for climate policy. The report, as such, has both positive and negative features. Methodologically, the report is deeply committed to reliance on large models, and within the report models are largely verified by comparison with other models. Given that models are known to agree more with each other than with nature (even after "tuning"), that approach does not seem promising. In addition, a number of the participants have testified to the pressures placed on them to emphasize results supportive of the current scenario and to suppress other results. That pressure has frequently been effective, and a survey of participants reveals substantial disagreement with the final report. Nonetheless, the body of the report is extremely ambiguous, and the caveats are numerous. The report is prefaced by a policymakers' summary written by the editor,

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"Let's go over to Celsius's place. I hear it's only 36° over there."

Sir John Houghton, director of the United Kingdom Meteorological Office. His summary largely ignores the uncertainty in the report and attempts to present the expectation of substantial warming as firmly based science. The summary was published as a separate document, and, it is safe to say that policymakers are unlikely to read anything further. On the basis of the summary, one frequently hears that "hundreds of the world's greatest climate scientists from dozens of countries all agreed that. . . ." It hardly matters what the agreement refers to, since whoever refers to the summary insists that it agrees with the most extreme scenarios (which, in all fairness, it does not). I should add that the climatology community, until the past few years, was quite small and heavily concentrated in the United States and Europe.

One might think that growing skepticism about warming would have some influence on public debate, but the insistence on "scientific unanimity" continues unabated. Unanimity in science is virtually nonexistent on far less complex matters. Unanimity on an issue as uncertain as "global warming" would be surprising and suspicious.

While the International Panel on Climate Change's reports were in preparation, the National Research Council in the United States was commissioned to prepare a synthesis of the current state of the global change situation. The panel chosen was hardly promising. It had no members of the academy expert in climate. Indeed, it had only one scientist directly involved in climate, Stephen Schneider, who is an ardent environmental advocate. It also included three professional environmental advocates, and it was headed by a former senator, Dan Evans. The panel did include distinguished scientists and economists outside the area of climate, and, perhaps because of this, the report issued by the panel was by and large fair. The report concluded that the scientific basis for costly action was absent, although prudence might indicate that actions that were cheap or worth doing anyway should be considered. A subcommittee of the panel issued a report on adaptation that argued that even with the more severe warming scenarios, the United States would have little difficulty adapting. Not surprisingly, the environmentalists on the panel not only strongly influenced the reports, but failing to completely have their way, attempted to distance themselves from the reports by either resigning or by issuing minority dissents. Equally unsurprising is the fact that the *New York Times* typically carried reports on that panel on page 46. The findings were never subsequently discussed in the popular media—except for claims that the reports supported the catastrophic vision. Nevertheless, the reports of that panel were indicative of the growing skepticism concerning the warming issue.

Indeed, the growing skepticism is in many ways remarkable. One of the earliest protagonists of global warming, Roger Revelle, the late professor of ocean sciences at Scripps Institution of Oceanography who initiated the direct monitoring of carbon dioxide during the International Geophysical Year (1958), coauthored with S. Fred Singer and Chauncy Starr a paper recommending that action concerning global warming be delayed insofar as current knowledge was totally inadequate. Another active advocate of global warming, Michael McElroy, head of the Department of

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Earth and Planetary Sciences at Harvard, has recently written a paper acknowledging that existing models cannot be used to forecast climate.

One might think that such growing skepticism would have some influence on public debate, but the insistence on "scientific unanimity" continues unabated. At times, that insistence takes some very strange forms. Over a year ago, Robert White, former head of the U.S. Weather Bureau and currently president of the National Academy of Engineering, wrote an article for *Scientific American* that pointed out that the questionable scientific basis for global warming predictions was totally inadequate to justify any costly actions. He did state that if one were to insist on doing something, one should only do things that one would do even if there were no warming threat. Immediately after that article appeared, Tom Wicker, a *New York Times* columnist and a confidant of Sen. Gore, wrote a piece in which he stated that White had called for immediate action on "global warming." My own experiences have been similar. In an article in *Audubon* Stephen Schneider states that I have "conceded that some warming now appears inevitable." Differences between expectations of unmeasurable changes of a few tenths of a degree and warming of several degrees are conveniently ignored. Karen White in a lengthy and laudatory article on James Hansen that appeared in the *New York Times Sunday Magazine* reported that even I agreed that there would be warming, having "reluctantly offered an estimate of 1.2 degrees." That was, of course, untrue.

Most recently, I testified at a Senate hearing conducted by Sen. Gore. There was a rather arcane discussion of the water vapor in the upper troposphere. Two years ago, I had pointed out that if the source of water vapor in that region in the tropics was from deep clouds, then surface warming would be accompanied by reduced upper level water vapor. Subsequent research has established that there must be an additional source—widely believed to be ice crystals thrown off by those deep clouds. I noted that that source too probably acts to produce less moisture in a warmer atmosphere. Both processes cause the major feedback process to become negative rather than positive. Sen. Gore asked whether I now rejected my suggestion of two years ago as a major factor. I answered that I did. Gore then called for the recording secretary to note that I had retracted my objections to "global warming." In the ensuing argument, involving mostly other participants in the hearing, Gore was told that he was confusing matters. Shortly thereafter, however, Tom Wicker published an article in the *New York Times* that claimed that I had retracted my opposition to warming and that that warranted immediate action to curb the purported menace. I wrote a letter to the *Times* indicating that my position had been severely misrepresented, and, after a delay of over a month, my letter was published. Sen. Gore nonetheless claims in his book that I have indeed retracted my *scientific* objections to the catastrophic warming scenario and also warns others who doubt the scenario that they are hurting humanity.

Why, one might wonder, is there such insistence on scientific unanimity on the warming issue? After all, unanimity in science is virtually nonexistent on far less complex matters. Unanimity on an issue as uncertain as "global warming" would be surprising and suspicious. Moreover, why are the opinions of scientists sought regardless of their field of expertise? Biologists and physicians are rarely asked to endorse some theory in high energy physics. Apparently, when one comes to "global warming," any scientist's agreement will do.

The answer almost certainly lies in politics. For example, at the Earth Summit in Rio, attempts were made to negotiate international carbon emission agreements. The potential costs and implications of such agreements are likely to be profound for both industrial and developing countries.

Carbon dioxide is vitally central to industry, transportation, modern life, and life in general. Dealing with the threat of warming fits in with a great variety of preexisting agendas—some legitimate, some less so.

Under the circumstances, it would be very risky for politicians to undertake such agreements unless scientists "insisted." Nevertheless, the situation is probably a good deal more complicated than that example suggests.

The Temptation and Problems of "Global Warming"

As Aaron Wildavsky, professor of political science at Berkeley, has quipped, "global warming" is the mother of all environmental scares. Wildavsky's

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view is worth quoting. "Warming (and warming alone), through its primary antidote of withdrawing carbon from production and consumption, is capable of realizing the environmentalist's dream of an egalitarian society based on rejection of economic growth in favor of a smaller population's eating lower on the food chain, consuming a lot less, and sharing a much lower level of resources much more equally." In many ways Wildavsky's observation does not go far enough. The point is that carbon dioxide is vitally central to industry, transportation, modern life, and life in general. It has been joked that carbon dioxide controls would permit us to inhale as much as we wish; only exhaling would be controlled. The remarkable centrality of carbon dioxide means that dealing with the threat of warming fits in with a great variety of preexisting agendas—some legitimate, some less so: energy efficiency, reduced dependence on Middle Eastern oil, dissatisfaction with industrial society (neopastoralism), international competition, governmental desires for enhanced revenues (carbon taxes), and bureaucratic desires for enhanced power.

As ever greater numbers of individuals attach themselves to the warming problem, the pressures against solving the problem grow proportionately; an inordinate number of individuals and groups depend on the problem's remaining.

The very scale of the problem as popularly portrayed and the massive scale of the suggested responses have their own appeal. The Working Group I report of the Intergovernmental Panel on Climate Change suggested, for example, that a 60 percent reduction in carbon dioxide emissions might be needed. Such a reduction would call for measures that would be greater than those that have been devoted to war and defense. And just as defense has dealt with saving one's nation, curbing "global warming" is identified with saving the whole planet! It may not be fortuitous that this issue is being promoted at just the moment in history when the cold war is ending.

Major agencies in the United States, hitherto closely involved with traditional approaches to national security, have appropriated the issue of climate change to support existing efforts. Notable among those agencies are NASA, the Department of Defense, and the Department of Energy. The cold war helped spawn a large body of policy experts and diplomats specializing in issues such as disarmament and alliance negotiations. In addition, since the Yom Kippur War, energy has become a major component of national security with the concomitant creation of a large cadre of energy experts. Many of those individuals see in the global change issue an area in which to continue applying their skills. Many scientists also feel that national security concerns formed the foundation for the U.S. government's generous support of science. As the urgency of national security, traditionally defined, diminishes, there is a common feeling that a substitute foundation must be established. "Saving the planet" has the right sort of sound to it. Fundraising has become central to environmental advocates' activities, and the message underlying some of their fundraising seems to be "pay us or you'll fry."

Clearly, "global warming" is a tempting issue for many very important groups to exploit. Equally clearly, though far less frequently discussed, are the profound dangers in exploiting that issue. As we shall also see, there are good reasons why there has been so little discussion of the downside of responding to "global warming."

A parochial issue is the danger to the science of climatology. As far as I can tell, there has actually been reduced funding for existing climate research. That may seem paradoxical, but, at least in the United States, the vastly increased number of scientists and others involving themselves in climate as well as the gigantic programs attaching themselves to climate have substantially outstripped the increases in funding. Perhaps more important are the pressures being brought to bear on scientists to get the "right" results. Such pressures are inevitable, given how far out on a limb much of the scientific community has gone. The situation is compounded by the fact that some of the strongest proponents of "global warming" in Congress are also among the major supporters of science (Sen. Gore is notable among those). Finally, given the momentum that has been building up among so many interest groups to fight "global warming," it becomes downright embarrassing to support basic climate research. After all, one would hate to admit that one had mobilized so many resources without the basic science's being in place. Nevertheless, given the large increase in

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the number of people associating themselves with climatology and the dependence of much of that community on the perceived threat of warming, it seems unlikely that the scientific community will offer much resistance. I should add that as ever greater numbers of individuals attach themselves to the warming problem, the pressures against solving the problem grow proportionally; an inordinate number of individuals and groups depend on the problem's remaining.

In addition to climatologists, are there other groups that are at risk? Here, one might expect that industry could be vulnerable, and, indeed, it may be. At least in the United States, however, industries seem to be primarily concerned with improving their public image, often by supporting environmental activists. Moreover, some industries have become successful at profiting from environmental regulation. The most obvious example is the waste management industry. Even electric utility companies have been able to use environmental measures to increase the base on which their regulated profits are calculated. It is worth noting that about 1.7 trillion dollars have been spent on the environment over the past decade. The environment, itself, qualifies as one of our major industries.

If Wildavsky's scenario is correct, the major losers would be ordinary people. Wealth that could have been used to raise living standards in much of the world would be squandered. Living standards in the developed world would decrease. Regulatory apparatuses would restrict individual freedom on an unprecedented scale. Here too, however, one cannot expect much resistance to proposed actions—at least not initially. Public perceptions, under the influence of extensive, deceptive, and one-sided publicity, can become disconnected from reality. For example, Alabama has had a pronounced cooling trend since 1935. Nevertheless, a poll among professionals in Alabama found that about 95 percent of the participants believed that the climate had been warming over the past fifty years and that the warming was due to the greenhouse effect. Public misperceptions coupled with a sincere desire to "save the planet" can force political action even when politicians are aware of the reality.

What the above amounts to is a societal instability. At a particular point in history, a relatively minor suggestion or event serves to mobilize massive interests. While the proposed measures may be detrimental, resistance is largely absent or coopted. In the case of climate change, the probability that the proposed regulatory actions would for the most part have little impact on climate, regardless of the scenario chosen, appears to be of no consequence.

Modelling and Societal Instability

So far I have emphasized the political elements in the current climate hysteria. There can be no question, however, that scientists are abetting this situation. Concerns about funding have already been mentioned. There is, however, another perhaps more important element to the scientific support. The existence of modern computing power has led to innumerable modelling efforts in many fields. Supercomputers have allowed us to consider the behavior of systems seemingly too complex for other approaches. One of those systems is climate. Not surprisingly, there are many problems involved in modelling climate. For example, even supercomputers are inadequate to allow long-term integrations of the relevant equations at adequate spatial resolutions. At presently available resolutions, it is unlikely that the computer solutions are close to the solutions of the underlying equations. In addition, the physics of unresolved phenomena such as clouds and other turbulent elements is not understood to the extent needed for incorporation into models. In view of those problems, it is generally recognized that models are at present experimental tools whose relation to the real world is questionable.

With poor and uncertain models in wide use, predictions of ominous situations are virtually inevitable—regardless of reality.

While there is nothing wrong in using those models in an experimental mode, there is a real dilemma when they predict potentially dangerous situations. Should scientists publicize such predictions since the models are almost certainly wrong? Is it proper to not publicize the predictions if the predicted danger is serious? How is the public to respond to such predictions? The difficulty would be diminished if the public understood how poor the models actually are. Unfortunately, there is a tendency to hold in awe anything that emerges from a sufficiently large computer. There is also a

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reluctance on the part of many modellers to admit to the experimental nature of their models lest public support for their efforts diminish. Nevertheless, with poor and uncertain models in wide use, *predictions of ominous situations are virtually inevitable*—regardless of reality.

Improved technology and increased societal wealth are what allow society to deal with environmental threats most effectively.

Such weak predictions feed and contribute to what I have already described as a societal instability that can cascade the most questionable suggestions of danger into major political responses with massive economic and social consequences. I have already discussed some of the reasons for this instability: the existence of large cadres of professional planners looking for work, the existence of advocacy groups looking for profitable causes, the existence of agendas in search of saleable rationales, and the ability of many industries to profit from regulation, coupled with an effective neutralization of opposition. It goes almost without saying that the dangers and costs of those economic and social consequences may be far greater than the original environmental danger. That becomes especially true when the benefits of additional knowledge are rejected and when it is forgotten that improved technology and increased societal wealth are what allow society to deal with environmental threats most effectively. The control of societal instability may very well be the real challenge facing us.

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Readings

The Rip-Out Rip-Off

The Asbestos Racket: An Environmental Parable
by Michael J. Bennett
(Merril Press, 1991), 241 pp.

Reviewed by Brooke Taylor Mossman

This riveting account of the motives and politics behind the asbestos panic in the United States should be required reading for congressional representatives, school administrators, realtors, and others who have been led to believe that asbestos in buildings poses a significant health risk to general occupants. As stressed in the forward by Reed Irvine, chairman of Accuracy in Media, Michael Bennett, a former deputy public information director of the Occupational Safety and Health Administration who was once nominated for a Pulitzer Prize for his series on asbestos for the *Detroit News*, goes to the root of federal policy on asbestos and the "mass madness" propagated by the government, media, and a burgeoning asbestos removal industry. He exposes a projected $150 billion to $200 billion asbestos rip-out campaign, which in many cases has actually increased concentrations of asbestos in air and cancer risks to untrained and unprotected asbestos removal workers.

Asbestos is a naturally occurring group of mineral fibers used since the Industrial Revolution in thousands of products because of their resistance to heat and their tensile strength and durability. The different types of asbestos can be classified into chrysotile fibers, which have consistently accounted for 90 to 95 percent of the world's industrial usage of asbestos, and amphibole asbestos, which includes amosite and crocidolite fibers, the latter having been used in World Wars I and II as insulation in battleships. Reports that asbestos workers developed fibrosis or scarring of the lungs in the early 1900s led to legislation in Europe and the United States in the 1930s that restricted exposure to asbestos in the workplace. In the 1940s asbestos production soared as it was used increasingly in brake linings and was incorporated into buildings and schools as insulation, textiles, and ceiling and floor tiles. Approximately 95 percent of bulk asbestos installed in buildings was chrysotile. In the 1950s the noted epidemiologist, Sir Richard Doll, made the association among asbestos, smoking, and lung cancer in asbestos workers. That was followed by South African Dr. J. Christopher Wagner's 1960 discovery of mesothelioma, a tumor of the body cavities associated with exposure to amphibole asbestos.

The campaign of public misinformation began in the late 1960s when Dr. Irving Selikoff of Mount Sinai Hospital in New York published a scientific study with inappropriate controls showing synergistic effects between smoking and exposure to asbestos in the development of lung cancer in a large cohort of U.S. insulation workers. Selikoff's flair for the news media, his profitable associations with labor union leaders and lawyers, and his alliance with Paul Brodeur, a reporter for *The New Yorker* who catapulted Selikoff's findings into the press, established asbestos as an occupational and environmental enemy. As Bennett painstakingly documents, Selikoff's studies conclusively proved that cigarette smoking was the primary agent and a more potent cause of lung cancer in insulation workers than asbestos, but Brodeur's articles ignored those those crucial facts. Other misconceptions advanced by the Selikoff-Brodeur team included the "one fiber can kill theory," which implied that any exposure to asbestos is lethal, and the concept that all asbestos types are equally dangerous—a fable that has been disproven by many reports in the peer-reviewed scientific literature. Dozens of authorities have concluded that chrysotile, the predominant asbestos fiber used in the United States, presents a

Brooke Taylor Mossman is a professor of pathology at the University of Vermont.

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substantially lower risk of mesotheliomas in asbestos workers than crocidolite or amosite asbestos.

Bennett convincingly describes the chain of events leading to the purposeful misclassification of asbestos as an environmental carcinogen, which was extrapolated from legitimate concerns about its role as an occupational carcinogen when encountered at high airborne concentrations in the unregulated workplace. In the 1960s the environmental movement was flourishing, and Rachel Carson's book, *Silent Spring*, arguing that there can be no safe level of exposure to any carcinogen, became dogma. The formation of the Environmental Defense Fund and Nixon's creation of the Environmental Protection Agency resulted in the banning of the pesticides DDT, aldrin-dieldrin, and heptachlor-cholorodone, and new targets were needed for regulations. At that juncture Selikoff testified before OSHA, using unsubstantiated risk estimates, that exposure to asbestos would cause 40,000 excess deaths per year. Those numbers were inflated further by a controversial "Estimates Document," signed by a few scientists subsequently unable to defend their views in the wake of severe criticism from the broad and highly respected scientific community. Consequently, asbestos became the number one environmental enemy and a stepping stone for EPA administrators and congressmen such as Rep. James J. Florio, who sponsored the Asbestos Hazard Emergency Response Act. That law, calling for all private and public schools in the U.S. to inspect for the presence of asbestos and to develop management plans for its control, was passed by Congress despite accumulating data showing that airborne levels of asbestos, even in buildings and schools where damage was evident, were infinitesimal in comparison with levels causing disease in workers. Warnings by scientists that unnecessary removals would result in elevated cancer risks in uneducated removal workers went unheeded.

Bennett's description of the politics and passage of the asbestos removal law and its consequences is fascinating—including the disclosure that Ruckelshaus, the first director of the EPA, tacitly agreed that the law was initiated to shift the financial responsibility for asbestos from the EPA to school systems. Moreover, in the late 1980s Ruckleshaus became the president of one of the largest asbestos abatement companies in the United States. Bennett is unrelenting, but justifiably so, in his blame of individuals for the crash of the Challenger space shuttle that was traced directly to a ban on asbestos-containing products mandated by the Consumer Product Safety Commission and the substitution of a less effective putty to seal the O-rings in the rocket. Likewise, he severely criticizes the announcement of a total ban on asbestos by the EPA that has recently been rescinded by the Fifth Circuit U.S. Court of Appeals.

There are few heroes in the asbestos saga—most notably the scientists, including Dr. Malcolm Ross, members of the American Medical Association, and others who have questioned the EPA's overestimation of environmental risks due to asbestos as well as the expenditures of billions of dollars of public and private funds to remove asbestos. Those monies should be directed to more important and documented public health risks including the AIDS epidemic, drugs, and alcohol. An encouraging note is the release by EPA administrator, William Reilly, of a new guidance document entitled "Managing Asbestos in Place." That shift in policy stresses that "[r]emoval is often not the best course of action to reduce asbestos exposure" and emphasizes that asbestos removal is only required during demolition or extensive renovation of asbestos-containing buildings. Unfortunately, that message has not filtered through regulatory agencies and has been downplayed by the news media. Realtors and bankers are still urging building owners to remove asbestos despite the fact that concentrations of asbestos in air often remain elevated for months after removal and risks to removal workers are increased.

There are many lessons to be learned from Michael Bennett's book, including fundamental principles of toxicology and a current scientific understanding of cancer. The most important message, however, is Bennett's "call to action" as detailed in the final chapter. Bennett advocates a broad-based coalition of taxpayers, building owners, and health professionals with immediate and long-range goals including the formulation of a uniform set of state-of-the-art standards for dealing with asbestos in buildings. Moreover, he recommends a revamping of the EPA to allow more independent scientific input into decision-making and less attention to unjustified political agendas. Those are ambitious, admirable, and necessary goals if we are to learn from past mistakes.

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Taxing Firms' Performance

Labor Unions and the Economic Performance of Firms
by Barry T. Hirsch
(W.E. Upjohn Institute for Employment Research, 1991), 142 pp.

Reviewed by Leo Troy

In this monograph Barry Hirsch has given one answer to *What Do Unions Do?* by Richard B. Freeman and James L. Medoff (Basic Books, 1985): they are bad for business! Hirsch compares the economic performance of comparable union and nonunion firms by using several standards: profits, investment in physical capital, expenditures on research and development, as well as advertising as a percentage of sales, and the ratio of debt to equity (higher in unionized firms). He finds that the unions' impact on those measures put organized firms at a competitive disadvantage.

When it comes to productivity levels and growth—the most important ingredient to successful economic performance of firms, workers, and the economy—Hirsch argues that "[n]either theory nor previous evidence provides unambiguous predictions as to union effects on productivity and productivity growth" (p. 117). The link to productivity growth, he says is "opaque." Nevertheless, he also states that "even if unionism has no direct effect on productivity growth, it may affect it indirectly via union effects on growth-enhancing investments in physical and R&D capital" (p. 5). That does not seem "opaque" to me. Since unions have such deleterious effects on profits, R&D expenditures, and capital investment, I, for one, find it impossible to doubt that unions must also negatively affect growth as well as the level of efficiency.

Precarious as it may be, let me appeal to the widespread, if not universal, reaction of employers who deal or have dealt with union work rules and productivity (in contrast to academics who have not). Employers' comments on union work rules and their negative effects on efficiency are unambiguous. Is this a figment of their real-world imagination? Indeed, when told that academics contend either that unions enhance productivity or that their statistical results are ambiguous, employers are, to put it mildly, incredulous. If academics' findings are reliable, then employers should *beg* unions to organize their employees. Indeed, maybe universal unionization is the secret ingredient America needs to become competitive! Meanwhile, declining unionization of the private economy proceeds apace across all advanced industrial nations.

The unions' alleged positive effects on productivity are explained by what Freeman and Medoff termed exit-voice. I equate that with what the earlier literature dubbed industrial jurisprudence in the work place, my thought being that the more things change, the more they stay the same. The collective expression of workers' preferences through their union (the alternative to exiting voluntarily or not) is said to lead to what in earlier times was known as the economy of high wages—higher wages offset by greater productivity. But the collective voice adds something else again, what "the traditional view of economists" has always averred: a monopoly that damages productivity levels and growth. Hirsch agrees that the level of productivity associated with unionism is "inconsistent with the evidence on profitability and employment" (p. 94), but at the same time, he continues, "in the absence of empirical evidence, little can be said about the direct negative effects of union work rules and limitations placed on management."

Hirsch's "on the one hand, on the other hand" comments on unions and productivity have been criticized in the homeland of the "British disease," where recent studies by economists at the London School of Economics have found no evidence for the view that unions reduce productivity growth or for the view that union rent-seeking inhibits investment. Perhaps one day academics will find unambiguous evidence on the unions' link to (un)productivity, but at this stage there is a gap between rational expectations and academic findings.

Hirsch identifies his model as the union tax model, a label aptly suited for a review in *Regulation*. Unions are regulatory bodies; they arose in the eighteenth century as private substitutes for government (mercantilist) regulation when regulation crumbled in the dawning age of Adam Smith. As regulatory bodies customarily do, unions levy taxes, in Hirsch's model on quasi rents. Hirsch defines quasi rents as "returns accruing to previously installed physical, intangible, or

Leo Troy is the Distinguished Professor of Economics at Rutgers University.

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"He belongs to a very, very strong union."

human capital above those obtainable in the capital's best alternative use" (p. 7). Quasi rents derive from the relative immobility of capital and labor; unions exercise their market power to share (tax) those rents. Quasi rents do not depend on imperfectly competitive markets; they arise even with free entry and open competition because they arise from the specialized character of the assets.

In Hirsch's model the sources that unions tax are the firm's quasi rents originating from innovative capital, R&D, and current earnings associated with limited foreign competition. The proportion of taxation varies across different tangible and intangible capital. The tax on long-lived capital, whose returns include normal returns, is substantial. To some extent firms can shelter their innovative capital by patents or licenses because they are mobile. The tax model also shows a strong negative relationship with company earnings and market value. By any measure the negative impact of unionism on company profitability and market value is large. Profitability (measured by Tobin's *Q*, the ratio of market value to replacement cost) is 20 percent lower in an average unionized company than a similar nonunion company, while the differential rate of return on capital is about 15 percent. While there is substantial variability in the profitability across industries, there is "[n]o evidence . . . [of] sizable or significant *positive* effects of unionization on profitability in any of the industry categories" (p. 48). As a result of union taxes on quasi rents, unionized companies invest roughly 20 percent less in physical capital and R&D than do similar nonunion companies. (Are these findings not the flip side of the productivity coin?) Altogether, what unions do to the economic performance of firms is nothing to cheer about!

Hirsch distinguishes his tax model from the traditional demand schedule model of capital-labor substitution because his model can distinguish movement along the demand schedule from the effects of a shift in the schedule. Nevertheless, as Hirsch agrees, "[t]he standard model does predict, however, that the capital-labor ratio will increase in response to a wage increase" (p. 14). Does his approach improve our knowledge? One must answer yes, because the difference between Alfred Marshall's basic concepts of change in the quantity demanded (movement along a demand schedule) and change in demand (a change in the entire schedule) is fundamental in economic analysis.

Hirsch's analysis of the economic performance of firms subject to union taxation is characterized by his usual standards of diligent, careful research and lucid presentation. That is evident from the data, methodology, and detailed bibliography. I would like to see him apply his analysis to the economic performance of governmental agencies. I suspect that the outcome would be far more appalling than his findings in the private sector.

Briefly, I would like to express my disappointment with one important use to which Hirsch has put his scholarly work. In the initial and closing chapters he concludes that his analysis and results give substance to the claims of employer opposition to unionization as the primary cause of unions' decline in this country. He rejects structural changes as mainly responsible. He reiterates the Freeman mythology, the politically correct model, about U.S.-Canadian comparisons as evidence. Since I have space here only for limited observations (but have published extensively on this matter), let me summarize why Hirsch errs.

Freeman and Medoff stated that they rejected structural change as responsible for union decline in the United States, despite their own statistical findings upholding that explanation, because the Canadian labor market had undergone the same structural change as the U.S. labor market, but Canadian unionism continued to grow as American unionism declined. Therefore, something else must be at work in the United States, to wit, employer opposition. A Greek chorus of academics across this country, Canada, and Europe chanted the politically correct dirge: employer opposition in the United States was the difference!

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Only that was not so! I have demonstrated that the Canadian labor market did not undergo the same change as the U.S. labor market, that it lagged the U.S switch from goods to services, and that in Canada government services were a major—perhaps the dominant—component of the changeover, whereas private services dominated the switch in the United States. I have also shown that, contrary to "world academic opinion," the emperor was not wearing any clothes: Canadian private unionism has tracked the decline of U.S. unionism, in membership since 1979 and in density since 1958. The official data combined government with private membership (and employment) and thus misled the politically correct analysis about events in Canada.

I also would ask Hirsch (and others), is not the substitution of capital for labor a structural change? In addition, I challenge the importance of employer opposition as a major factor in union decline. Employer opposition is both legal and illegal—a distinction typically ignored by the conventional wisdom. Given that union membership losses were so overwhelming (7 million over the past two decades), new organization could not possibly offset them, irrespective of employer opposition—legal or not. Those losses came about because regulatory bodies (those who tax quasi rents) met the marketplace in the new age of Adam Smith. (Incidentally, employer opposition itself is a market force.)

In the same vein, I ask of the conventional wisdom, what of *employee opposition* to unions? Yes, if one consults surveys done by the unions themselves and others, one would find that two-thirds of nonunion workers would reject union representation both in the United States and in Canada.

One final criticism of a work I regard as of very high quality: Hirsch errs in asserting in his introductory remarks that manufacturing declined in importance in the United States. (Deindustrialization is another myth of the 1980s.) The share of real gross domestic product originating from manufacturing has remained stable over the past quarter century or longer. On average, so has employment, when we take into account cyclical influences. What has changed is the output of manufacturing and the composition of its work force—fewer production and more white-collar employment.

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